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NorthLinkWA
Perth-Darwin National Highway

Baseline Survey Report

**Flora and Vegetation – Inland Waters
Environmental Quality – Hydrological Processes**

Perth–Darwin National Highway (Swan Valley Section)

OCTOBER 2017





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EXECUTIVE SUMMARY

Background

Main Roads Western Australia (MRWA) proposes to construct a new 38 km section of the Perth-Darwin National Highway (Swan Valley Section) (see Figure 1) extending between Malaga and Muchea in Western Australia. The project consists of the construction of a dual carriageway highway which will connect the intersection of Tonkin Highway and Reid Highway in the south with Great Northern Highway and Brand Highway in the north.

In November 2015, MRWA commissioned the pre-construction baseline groundwater and surface water quality assessment. Initial works identified critical data gaps within the existing groundwater monitoring network, including the absence of monitoring wells in key locations. To provide adequate coverage of groundwater resources, a suitable groundwater monitoring network was installed in January 2016.

A total of 55 groundwater monitoring bores and 22 surface water locations were monitored as part of the overall program. In alignment with Ministerial Statement No. 1036 the baseline survey groups have been separated into two separate groups with this report focusing on the Aquatic Ecosystems Group.

It is understood that construction of the road started on June 12, 2017.

Project Objectives

The overarching objective of this pre-construction baseline groundwater and surface water survey is to develop a comprehensive groundwater and surface water baseline data set, across the proposal footprint in order to meet requirements of Ministerial Statement No. 1036, conditions 14-3, 14-5 and 14-6 such that trigger and threshold criteria can be established and future project environmental performance can be monitored and measured against key parameters.


Environmental Setting

The project is situated in the northern part of the Perth Basin, comprising deeper Jurassic and Cretaceous age sediments overlain by late Tertiary and Quaternary age sediments.

The site traverses predominantly across superficial deposits of Bassendean Sands, a geological unit characterised by pale grey to white sub-rounded quartz sand, predominantly medium-grained, however can exhibit material ranging from fine to coarse grain. A layer of friable, limonite-cemented sand, colloquially called 'coffee rock', occurs throughout most of the area near the water table (Golder 2014). The Bassendean sands unconformably overlie the sedimentary rock sequence of the Perth Basin that sit on the Precambrian crystalline rocks of the Yilgarn Craton.

Surface Water and Groundwater Baseline Survey

The baseline groundwater and surface water survey commenced in December 2015 and was completed in May 2017. This baseline survey has been conducted in general accordance with the Coffey (2016b) draft Flora and Vegetation – Inland Waters Environmental Quality – Hydrological Processes – Baseline Survey Plan (BSP) (Coffey, 2016b) and the for Flora and Vegetation – Inland Waters Environmental Quality – Hydrological Processes – Condition EMP (CEMP) (Coffey, 2016).



Sampling and analysis activities were implemented to assess the baseline conditions of groundwater and surface water values along the project alignment and adjacent to sensitive ecological receptors including:

1. The major surface water features intercepted by the project footprint included both the Ellen Brook and Bennett Brook catchments. The alignment also intercepts two other minor catchments referred to as Henley Brook and St Leonards Creek catchments.
2. Twenty Conservation Category Wetlands (CCWs) occur along the length of the proposal footprint. Seven of the CCW are located within or partially within the proposal footprint. The remaining CCWs are to varying degrees within 75 m of the proposal footprint.
3. A number of occurrences of Mound Springs Swan Coastal Plan (SCP) adjacent to the project footprint. The Mound Springs SCP Threatened Ecological Communities (TEC) is characterised by continuous discharge of groundwater in raised areas of peat, which provide a stable, permanently moist series of microhabitats.
4. The Gngangara Mound which is currently the most significant source of groundwater for the Perth region as well as a vital part of groundwater dependent ecosystems. The project intercepts a number of priority areas and protection zones of the Gngangara Underground Water Pollution Control Area (GUWPCA) including:
 - a) Priority 1 area – areas that are managed to ensure no degradation of the drinking water source occurs. These areas contain the greatest restrictions on land use and activity and aim to avoid all risks to the drinking water source.
 - b) Priority 3 area – areas where management of risk to water sources from catchment activities are targeted. These are principally areas where existing land use co-exists with water supply sources.
 - c) Eight Wellhead Protection Zones (WHPZ) – circular zones established around groundwater production wells to protect drinking water sources from contamination. In Priority 1 areas WHPZ have a radius of 500 m, in Priority 2 and 3 areas the radius is 300 m. Special conditions, such as restrictions on storage and use of chemicals, may apply within these zones (DOW, 2006c).


Adopted Assessment Criteria

The adoption of assessment criteria used to assess baseline conditions of both surface water and groundwater along the proposal footprint varies with respect to the key receiving environments and sensitivity of receptors, however includes:

- Australian and New Zealand Environment and Conservation Council (ANZECC)(2000) Fresh water 95% level protection for slightly to moderately disturbed ecosystems;
- ANZECC (2000) Lowland River default levels for slightly to moderately disturbed ecosystems; and
- Department of Environmental Regulation (DER) (2015) Treatment and management of soil and water in acid sulfate soil landscapes.

Results

Groundwater levels within the proposal footprint experience a seasonal high following the wet season (around September/October) and are at a seasonal low around April/May. Calculation of groundwater relative levels (RLs) in meters Australian Height Datum (mAHD) range from approximately 27 mAHD at the most southern section of the alignment (MW01) to 55 mAHD at MW42.



Groundwater levels measured in MW42 have periodically registered groundwater levels greater than the ground height. The reason for this is identified as the well location intercepting groundwater under pressure within an area of the Mound Springs SCP TEC buffer zones characterised by continuous discharge of groundwater in raised areas of peat and other organic deposits.

Trace metals and metalloids indicate that aluminium, cadmium and zinc are commonly elevated within groundwater resources along the alignment. Surface water bodies are generally buffered from elevated trace metals however exhibit soluble aluminium concentrations in excess of the ANZECC Freshwater (95% protection level) criteria.

Evidence suggests that portions of the alignment are already subject to acidification or groundwater is susceptible to acidification via disturbance and oxygenation from activities such as dewatering. Low pH, alkalinity and acidity concentrations along with low alkalinity ratios and high dissolved Aluminium concentrations are key indicators for this. Depleted alkalinity along the alignment is indicative of groundwater that is unable to maintain a stable pH range following groundwater table fluctuations.

Nutrient concentrations indicate that low levels of ammoniacal nitrogen is present however elevated total nitrogen levels indicate a possible source of inorganic nitrogen is present in the system.

Overall the baseline survey program was conducted in line with the CEMP and BSP. Quality assurance and quality control review indicates the analytical data to be a suitability quality for interpretation purposes.

Recommendations

The following recommendations are made with respect to the baseline surface and groundwater monitoring program:

1. Update the interim site specific trigger and threshold criteria for key water quality parameters to provide a set of assessment levels such that data will include seasonal high and lows and that the future project environmental performance can be monitored and measured against key parameters.

Details relating to determining the site specific trigger and threshold criteria can be found in Appendix M.

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Document Control

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1 INTRODUCTION

1.1 Background

Main Roads Western Australia (MRWA) proposed to construct a new 38 km section of the Perth-Darwin National Highway (Swan Valley Section) (Figure 1) extending between Malaga and Muchea in Western Australia (the project). The project consists of the construction of a dual carriageway highway that will connect the intersection of Tonkin Highway and Reid Highway in the south with Great Northern Highway and Brand Highway in the north.

In November 2015, MRWA commissioned the pre-construction baseline groundwater and surface water quality assessment comprising a detailed desktop assessment, site walkover to identify surface water locations and existing groundwater monitoring wells and implementation of a monthly sampling and analysis regime to characterise pre-construction water quality along the alignment. Initial works identified critical data gaps within the existing groundwater monitoring network, including the absence of monitoring wells in key locations and the unsuitable screening of the existing monitoring wells for geochemical analysis. To provide adequate coverage of groundwater resources, a suitable groundwater monitoring network was installed in January 2016.

The sampling program was subsequently amended to include the new monitoring locations and additional sample and analysis requirements. A total of 55 groundwater monitoring bores and 22 surface water locations were monitored as part of the overall program. In alignment with Ministerial Statement No. 1036 the baseline survey groups have been separated into two separate groups with this report focusing on the Aquatic Ecosystems Group (i.e not all groundwater wells and surface water locations).

It is understood that construction of the road started on June 12, 2017.

1.2 Purpose of Document

This report has been developed to assist with fulfilling conditions 14-3, 14-5 and 14-6 as required by Ministerial Statement No. 1036. This report presents the findings from the entire 17 month period of the pre-construction baseline groundwater and surface water survey, including assessment of water quality against relevant available assessment criteria and presentation of key trends in critical water quality parameters.

Interim threshold and trigger criteria been developed based on the first 11 month period and are presented within the Draft Environmental Flora and Vegetation Inland Waters Quality – Hydrological Processes – Condition Environmental Management Plan (Coffey, 2016). Upon the completion of this baseline survey report, it is proposed that the interim threshold and trigger criteria are updated.

1.3 Project Objectives

The overarching objective of this pre-construction baseline groundwater and surface water survey is to develop a comprehensive groundwater and surface water baseline data set, across the proposal footprint in order to meet requirements of Ministerial Statement No. 1036, conditions 14-3, 14-5 and 14-6 such that trigger and threshold criteria can be established and future project environmental performance can be monitored and measured against key parameters. Ministerial Statement conditions specific to the baseline survey phase of work are presented in Table 1.1 below.

Table 1.1 Relevant Ministerial Statement conditions

Condition number	Condition
14-3	The proponent shall undertake baseline surveys prior to ground disturbing activities for the purpose of establishing trigger and threshold criteria as required by condition 8-2.
14-5	After receiving notice in writing from the CEO that the Baseline Survey Plan satisfies the requirements of condition 14-4, the proponent shall undertake the baseline surveys in accordance with the requirements of the Baseline Survey Plan.
14-6	On completion of the baseline surveys the proponent shall report to the CEO on the following: <ol style="list-style-type: none">1. Completion of the baseline surveys in accordance with the Baseline Survey Plan.2. The results of the baseline surveys.

1.4 Scope of Work

To achieve the objectives of the monitoring program the following scope of works were undertaken:

- Desktop review including:
 - Review of relevant environmental policies, strategies and criteria.
 - Review of Public Environmental Report (PER) documentation presenting details on environmental attributes, values and issues of concern.
 - Determination of potential environment impact and disturbances from the proposed development.
- An initial groundwater monitoring well condition assessment and baseline monitoring round for the previously existing wells and surface water locations.
- Development and installation of a groundwater monitoring well network.
- Ongoing baseline groundwater and surface water survey (17 rounds).



2 ENVIRONMENTAL SETTING

2.1 Regional Geology

The project is situated in the northern part of the Perth Basin, comprising deeper Jurassic and Cretaceous age sediments overlain by late Tertiary and Quaternary age sediments.

The site traverses predominantly across superficial deposits of Bassendean Sands, a geological unit characterised by pale grey to white sub-rounded quartz sand, predominantly medium-grained, however can exhibit material ranging from fine to coarse grain. A layer of friable, limonite-cemented sand, colloquially called 'coffee rock', occurs throughout most of the area near the water table (Golder 2014). The Bassendean sands unconformably overlie the sedimentary rock sequence of the Perth Basin that sit on the Precambrian crystalline rocks of the Yilgarn Craton (Golder, 2014).

2.2 Hydrogeology


The regional hydrogeological conditions within which the project footprint is situated can be broadly characterised into three hydrogeological domains (Figure 2) (Golder, 2014).

- Hydrogeological Domain 1 (southern part of the alignment) – Bassendean Sand deposits are generally thicker and groundwater elevations are generally 3 m to 10 m below ground surface. Surface water and wetlands are still present in this section and are considered to be associated with the intersection of the groundwater level with the ground surface in interdunal depressions or swales. However, some of these wetlands may also be perched groundwater in distinct areas or pockets of low permeability material either at or below ground surface.
- Hydrogeological Domain 2 – Springs and wetlands are most common along the interface between the Guildford Formation and the Bassendean Sand. Groundwater levels have historically been within 1 m to 5 m of ground surface within the domain. Springs and wetlands have been known to form in the domain as groundwater can potentially intersect the ground surface as a result of the difference in permeability of the Bassendean Sand and Guildford Formation.
- Hydrogeological Domain 3 (northern section of the alignment) – The Guildford Formation is the dominant geological unit of Domain 3. During heavy rainfall, water may become temporarily perched on the surface of this formation or within sandy lenses or pockets due to low permeability materials impeding rainfall infiltration. Groundwater levels are expected to be largely within 5 m of ground surface in this domain.

2.3 Surface Water Features

Detailed information on surface water features within the site is presented in the Public Environmental Review (PER) (Coffey, 2015). These features are summarised as follows:

- The major surface water features intercepted by the project footprint included both the Ellen Brook and Bennett Brook catchments. The alignment also intercepts two other minor catchments referred to as Henley Brook and St Leonards Creek catchments.
- Twenty Conservation Category Wetlands (CCWs) occur along the length of the proposal footprint. Seven of the CCW are located within or partially within the proposal footprint. The remaining CCWs are to varying degrees within 75 m of the proposal footprint.



The PER also identified lakes protected by the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 (EPP Lakes Policy). Three such lakes were identified in the project footprint and another two occur in close proximity (i.e. within 100 m). The Environmental Protection Policy (EPP) Lakes Policy was revoked in November 2015, after the PER was published. The five lakes formerly recognised under the policy correspond with wetlands already identified in the geomorphic Swan Coastal Plain dataset.

2.4 Surface Water Drainage

Drainage across the project area has been categorised into three distinct zones (Figure 3A – Figure 3F):

- **Urban.** This zone lies within a predominantly urbanised landscape with extensive formal drainage systems.
- **P1 zone.** This zone is largely low density land use and is characterised by an interdunal landscape, with limited watercourses present. This zone is largely located within the Priority 1 protection area of the GUWPCA.
- **Palusplain.** This zone has largely been cleared for agriculture and is characterised by a gently sloping plain subject to seasonal inundation and waterlogging associated with a shallow water table. The zone contains numerous small ephemeral streams, wetlands and the major waterway of Ellen Brook.

2.5 Groundwater

Groundwater from the Gngangara Mound is used to support domestic, environmental, recreational, commercial (horticulture and agriculture) and industrial needs. The Gngangara Mound is currently the most significant source of groundwater for the Perth region as well as a vital part of groundwater dependent ecosystems. The project intercepts a number of priority drinking water source areas and well head protection zones of the GUWPCA (see Figure 2) including:


- **Priority 1 area** – areas that are managed to ensure no degradation of the drinking water source occurs. These areas contain the greatest restrictions on land use and activity and aim to avoid all risks to the drinking water source.
- **Priority 3 area** – areas where management of risk to water sources from catchment activities are targeted. These are principally areas where existing land use co-exists with water supply sources.
- **Eight Wellhead Protection Zones (WHPZ)** – circular zones established around groundwater production wells to protect drinking water sources from contamination. In Priority 1 areas WHPZ have a radius of 500 m, in Priority 2 and 3 areas the radius is 300 m. Special conditions, such as restrictions on storage and use of chemicals, may apply within these zones (DOW, 2006).

2.6 Groundwater Flow Direction

Across the majority of the proposal footprint groundwater flow is from the Gngangara Mound in an easterly to southerly direction with groundwater discharging into Ellen Brook to the east or the Swan River to the south. However, in the northern section within Hydrogeological Domain 3 groundwater generally flows from the Perth Hills and Darling Scarp in a southwest direction with discharge into Ellen Brook (Golder, 2014).

2.7 Threatened and Priority Ecological Communities and Threatened Flora

A number of Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs) and Threatened flora species are in the vicinity of the project (Figure 4A – 4F) as discussed below:

- 
1. The alignment is located adjacent to a number of occurrences of Swan Coastal Plain (SCP) Mound Springs, a Commonwealth and State listed TEC also known as Tumulus Mound Springs. The SCP Mound Springs TEC is characterised by continuous discharge of groundwater in raised areas of peat, which provide a stable, permanently moist series of microhabitats.
 2. The Critically Endangered Claypans of the SCP TEC was found located adjacent to Great Northern Highway, adjacent to the development envelope.
 3. The Threatened flora species *Darwinia foetida* was found in the Great Northern Highway road reserve at Muchea, adjacent to but not within the proposal footprint. Other records for this species exist about 250 m from the proposal footprint northwest of Neaves Road.
 4. The Critically Endangered Western Swamp Tortoise currently occurs at four locations, two of which (Ellen Brook Nature Reserve and Twin Swamps Nature Reserve) occur within 6 km of the alignment.

2.8 Acid Sulfate Soils

Acid sulfate soils (ASS) are soils that contain iron sulfides, predominantly pyrite. The formation of pyrite requires the presence of iron (naturally available from sediments), sulfur (S) (usually from seawater or sediments of marine origin) and organic matter.

A preliminary investigation into the potential presence of ASS was undertaken in accordance with the guideline Department of Environment Regulation (DER) guideline Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (DER, 2013).

The potential for ASS occurrence was assessed using a tailored ASS risk mapping process (Figure 5A – Figure 5F). This involved mapping soils within the proposal footprint as having a low, medium or high risk of ASS occurrence, taking into consideration site elevation, geology, groundwater depth and wetland presence and classification, in addition to DER ASS risk mapping.

Preliminary soil sampling also identified that of the seven sites sampled from within areas mapped as high risk of ASS occurrence. Two sampling locations exceeded the DER net acidity criterion of 0.03% S confirming the presence of ASS within the proposal footprint.

Areas of particular concern, in relation to the occurrence of ASS at the site include:

- Watercourse crossings.
- Low-lying areas and wetlands.
- Areas of light grey to grey sands typical of 'Bassendean Sands'.
- Silty or peaty soils.
- Areas containing iron-cemented organic rich sands (coffee rock).

3 DATA QUALITY OBJECTIVES

The scope of works associated with the pre-construction baseline groundwater and surface water survey was undertaken to comply with the Data Quality Objectives (DQO) methodology outlined in the National Environment Protection Council (NEPC) document (NEPC, 2013a). The DQO process provides a systematic planning approach to developing sampling designs for data collection activities that will ultimately support the conclusions and recommendations provided in this report. This process has seven steps, which have been followed in the planning and execution of this investigation, as summarised in Table 3.1 below.

Table 3.1 Groundwater monitoring well construction details

Step 1: State the Problem	
The Problem	Main Roads Western Australia (MRWA) proposes to construct a new 38 km section of the Perth-Darwin National Highway (Swan Valley Section) (Figure 1) between Malaga and Muchea in Western Australia (the proposal). In accordance with Ministerial Statement No. 1036 conditions, 14-3, 14-5 and 14-6 a pre-construction baseline groundwater and surface water survey is required to be undertaken such that trigger and threshold criteria can be established and future project environmental performance can be monitored and measured against key water quality parameters.
Step 2: Identify the goal of the study	
Objective	The objective of this investigation has been defined in Section 1.3.
Step 3: Identify the information inputs	
Media Requiring Assessment	Surface water and groundwater.
Environmental Parameters to be Measured in Each Media	Parameters to be measured are outlined in Table 4.1.
Assessment Criteria	Assessment Criteria are defined in Section 5.
Analytical Methods	Analytical Methods were consistent NATA approved laboratory methodologies. Samples were sent to NATA accredited laboratories. A laboratory quality assurance assessment is provided in Section 9.
Step 4: Define the boundaries of the study	
Investigation Boundary	The boundary of the investigation area was defined as the proposal footprint as seen in Figure 1.
Constraints That May Affect the Assessment	Identified constraints which impeded the investigation included: <ul style="list-style-type: none"> • Weather conditions and seasonal fluctuations at the time of sampling such that sample locations had insufficient water for a sample to be collected. • Access issues to sample locations caused by property owner’s access requirements. • Insufficient data to calculate trigger and threshold values based on a full 24 months’ worth of monitoring data as outlined in ANZECC/ARMCANZ (2000). • Analytical results could be unreliable due to the analysis not being conducted within the short holding times associated with some analytical parameters.



	<ul style="list-style-type: none"> • Condition Environmental Management Plan (CEMP) and Baseline Survey Plan (BSP) developed to help guide the baseline sampling were developed after sampling occurred and may not cover all issues identified in the field. • Limitations associated with sampling methodology of Hydrasleeves. • Monitoring started prior to the completion of the BSP and CEMP. As such, this report may not meet the requirements of the BSP and CEMP. • Laboratories “Limit of Reporting” (LOR) is above the adopt assessment criteria.
Step 5: Develop the analytical approach	
Decision Rules	<p>The decision rules for the project have been based on an analysis of current and future land uses and potential receptors which in turn led to the selection of assessment criteria for the site.</p> <p>If the average or monthly variability of the background data collected exceeds the adopted assessment criteria then site specific assessment criteria will need to be developed in the form of trigger and threshold criteria.</p>
Step 6: Specify performance or acceptance criteria	
Baseline Condition	The baseline condition for the assessment assumes that surface and groundwater conditions are suitable for the proposed land use and are not posing a risk to identified receptors. The baseline condition will be considered true unless data is presented to indicate otherwise.
Decision Errors	<p>The following specifies the decision errors in which incorrect decisions can be made based on data that is not representative of site conditions. As outlined in NEPC (2013a) NEPM Schedule B2 there are two types of decision errors as follows.</p> <ul style="list-style-type: none"> • An insufficient sampling program resulting in the inability to satisfactorily characterise background water quality parameters or the presence of contaminants across the site. • Errors occurring during the collection, handling, preparation and analysis of samples. <p>Consequences of these decision errors will include the following.</p> <ul style="list-style-type: none"> • Incorrect assessment of baseline conditions. • Unrepresentative trigger and threshold criteria. <p>In order to ensure the results are suitably accurate and reproducible for use in the decision-making process, the quality assurance and quality control QA/QC procedures documented in Section 7 have been followed.</p>
Step 7: Develop the plan for obtaining data	
Optimisation of Data	<p>To optimise the data collected during sampling, this investigation was conducted in accordance with NEPC (2013a). Furthermore to ensure the data collected was suitable for interpretation during sample collection the following were adhered to.</p> <ul style="list-style-type: none"> • Optimisation of laboratory LOR to be at or less than the environmental assessment criteria where practicable. • Samples collected using dedicated sampling equipment/containers. • Blind labelled triplicate samples are to be submitted to a secondary laboratory. • QA/QC protocols adhered to.

4 BASELINE SAMPLING AND ANALYSIS PROGRAM

The baseline groundwater and surface water survey commenced in December 2015 and was completed in May 2017. This baseline survey has been conducted in general accordance with the Coffey (2016b) draft Flora and Vegetation – Inland Waters Environmental Quality – Hydrological Processes – Baseline Survey Plan (BSP) (Coffey, 2016b) and the for Flora and Vegetation – Inland Waters Environmental Quality – Hydrological Processes – Condition EMP (CEMP) (Coffey, 2016), (as these reports was developed after monitoring began), designed to meet Ministerial Statement No. 1036 conditions 14-3, 14-5 and 14-6.

4.1 Sampling Method and Parameters

The baseline survey detailed within the following sections has been developed with consideration given to the objectives of the pre-construction baseline surface water and groundwater monitoring program in order to allow for data comparison during the construction and post construction phases of the project.

Surface water and groundwater monitoring is undertaken using regulatory guidance and standards including:

- National Environment Protection Council 1999 (amended 2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM), Schedule B2: Guideline on Data Collection, Sample Design and Reporting.
- DOW (2009) Field Sampling Guidelines: A guideline for Field Sampling for Surface Water Quality Monitoring Programs.
- Department of Environment and Regulation (DER, 2015) Treatment and Management of Soil and Water in Acid Sulfate Soil Landscapes.
- Department of Environment and Regulation (DER, 2014) Contaminated Sites Guidelines: Assessment and Management of Contaminated Sites.
- Australian Standard AS 5667.1:1998 Water Quality-Sampling – Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples.
- Australian Standard AS 5667.4:1998 Water Quality-Sampling – Guidance on Sampling from Lakes, Natural and Man-made.
- Australian Standard AS 5667.6:1998 Water Quality-Sampling – Guidance on Sampling of Rivers and Streams.
- Australian Standard AS 5667.11:1998 Water Quality-Sampling – Guidance on Sampling of Groundwaters.

Laboratories accredited by the NATA for the analyses undertaken are used to determine concentrations of selected analytical parameters in all cases.

4.1.1 Acid Sulfate Soil Monitoring Requirements

Environmental impacts may occur in ASS areas where excavation and exposure of soils and/or dewatering is proposed. Dewatering or groundwater disturbance in an ASS location (including dewatering discharge) will be managed through a site-specific Acid Sulfate Soil and Dewatering Management Plan (ASSDMP) in accordance with the following:

- Water Quality Protection Note 13 - Dewatering of soils at construction sites (DOW, 2012).

- 
- Treatment and management of soil and water in acid sulfate soil landscapes (DER, 2015).

In accordance with state-based guidelines, a sufficient level of pre-construction ASS assessment will be undertaken where groundwater disturbance activities are proposed to take place in an area with an inadequate level of pre-existing ASS assessment to characterise ASS risk.

4.1.2 Generic Monitoring Requirements

Table 4.1 presents the baseline survey surface water and groundwater parameters selected for laboratory analysis, the results of which will be used to develop trigger and threshold levels.



Table 4.1 Groundwater and surface water parameters selected for laboratory analysis

Location	Parameters to be analysed
Groundwater (55 locations)	
Groundwater parameters – during fieldwork monthly	pH, temperature, dissolved oxygen, EC, TDS, Total acidity and alkalinity.
Groundwater parameters – laboratory analysed monthly	<p>Physical parameters: pH (Lab); EC (lab); TDS; Turbidity</p> <p>Major anions and cations: Hardness as CaCO₃; Alkalinity (Bicarbonate as CaCO₃); Alkalinity (Carbonate as CaCO₃); Alkalinity (Hydroxide) as CaCO₃; Alkalinity (total) as CaCO₃; Acidity as CaCO₃; Sulfate; Chloride; Calcium; Magnesium; Potassium; Sodium; Anions Total; Cations Total; Ionic Balance Total acidity and total alkalinity.</p> <p>Metals: 12 dissolved and total metals (Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Zn).</p> <p>Nutrients: Total Nitrogen (TN), NO₃ (Nitrate), NO₂ (Nitrite), NH₃ as N (Ammonia), Total P (Total Phosphorus) and Filterable Reactive Phosphorus (FRP), Oxidised Nitrogen (NO_x).</p>
Groundwater extended laboratory analysis (one monitoring round only)	Total recoverable hydrocarbons (TRH): benzene, toluene, ethylbenzene, xylene (BTEX) – all locations. TRH/BTEX will be sampled for at all locations during one monitoring round in order to gather baseline data. Given the absence of a source potentially contributing hydrocarbon contamination to groundwater (with the exception of Sims Metals), TPH/BTEX is not considered a priority chemical of potential concern. However, during the construction phase monitoring, comparisons to these parameters may be required (e.g. in the event of a fuel leak/spill).
Surface water (22 Locations)*	
Surface water parameters – during fieldwork monthly	pH, temperature, dissolved oxygen, EC, TDS, Total acidity and alkalinity.
Surface water parameters – laboratory analysed monthly	<p>Physical parameters: pH (Lab); EC (lab); TDS; Turbidity</p> <p>Major anions and cations: Hardness as CaCO₃; Alkalinity (Bicarbonate as CaCO₃); Alkalinity (Carbonate as CaCO₃); Alkalinity (Hydroxide) as CaCO₃; Alkalinity (total) as CaCO₃; Acidity as CaCO₃; Sulfate; Chloride; Calcium; Magnesium; Potassium; Sodium; Anions Total; Cations Total; Ionic Balance; Total acidity and total alkalinity.</p> <p>Metals: 12 dissolved and total metals (Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Se, Zn).</p> <p>Nutrients: Total Nitrogen (TN), NO₃ (Nitrate), NO₂ (Nitrite), NH₃ as N (Ammonia), Total P (Total Phosphorus) and FRP, Oxidised Nitrogen (NO_x).</p> <p>Bacteria: (Thermotolerant bacteria, <i>E. coli</i>).</p>
Surface water extended laboratory analysis (one monitoring round only)	TRH, BTEX – all locations. TRH/BTEX will be sampled for at all locations during one monitoring round in order to gather baseline data. Given the absence of a source possibly contributing hydrocarbon contamination to surface waters and based on field evidence TPH/BTEX is not considered a priority chemical of potential concern, however, during the construction phase monitoring of these parameters may be required (e.g. in the event of a fuel leak/spill).

* To ensure a representative and comparable baseline dataset, three surface water samples were collected from each wetland sampling location.

5 ASSESSMENT CRITERIA

The adoption of assessment criteria used to assess baseline conditions of both surface water and groundwater along the proposal footprint varies with respect to the key receiving environments and sensitivity of receptors. In alignment with Ministerial Statement No. 1036 the baseline survey groups have been separated into the following categories along the proposal footprint as follows:

- **Sampling Group Aquatic (freshwater/groundwater dependant) ecosystems:** includes CCWs (high conservation value) and TECs (including *Darwinia foetida*, Claypans of the Swan Coastal Plain, Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)).
- **Sampling Group GUWPCA and Ellen Brook:** includes Priority 1 and Priority 3 Drinking Water Source Areas and Wellhead Protection Zones, surface water features within Ellen Brook and Chandala Brook.

As mentioned in Section 1.1, this report pertains to the Aquatic ecosystems group. Baseline survey locations are spatially distributed within each group to assess baseline water quality with which these receptors are maintained in their undisturbed or current state. As a conservative approach, criteria relevant to the most sensitive receptor associated with a specific location have been used as the initial 'assessment criteria'. The selected assessment criteria along with justification is presented in Section 5.2.

5.1 Sampling Locations

As outlined in both the Flora and Vegetation CEMP and BSP the following groundwater and surface water locations in Table 5.1 have been used to assess the groundwater and surface water conditions within the alignment, to meet the relevant ministerial conditions.

Table 5.1 Aquatic Ecosystem Sampling Locations

Aquatic Ecosystems Sampling Locations
<p>Sampling group Claypans of the Swan Coastal Plain and <i>Darwinia foetida</i></p> <p>MW50, MW51, MW52</p> <p>SWL20</p>
<p>Sampling group Communities of Tumulus Springs</p> <p>MW40, MW41, MW42</p> <p>SWL17</p>
<p>Sampling group CCWs</p> <p>MW1, MW2, MW3, MW4, MW5, MW6, MW10, MW11, MW12, MW26, MW27, MW28, MW29, MW30, MW31, MW32, MW36, MW37, MW38, MW39, MW40, MW41, MW42, MW55</p> <p>SWL1, SWL2, SWL3, SWL4, SWL5, SWL6, SWL7, SWL8, SWL9, SWL10, SWL11, SWL12, SWL13, SWL14, SWL15, SWL16, SWL17</p>

5.2 Assessment Criteria Rationale

The following assessment criteria has been used to evaluate the current groundwater and surface water current conditions.

5.2.1 ANZECC (2000) Fresh water 95% level protection for slightly to moderately disturbed ecosystems

The Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand Australian Water Quality Guidelines – Fresh water aquatic ecosystem (slightly to moderately disturbed ecosystems) (ANZECC and ARMCANZ, 2000) were considered appropriate to compare the groundwater and surface water quality given *Darwinia foetida* habitat, Claypans of the Swan Coastal Plain, Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) and CCWs have been affected to a relatively small but measurable degree by human activity (ANZECC and ARMCANZ, 2000). Furthermore the surface water catchments for Claypans of the Swan Coastal Plain, Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) and CCWs include areas receiving runoff from land disturbed to varying degrees by pastoralism (ANZECC and ARMCANZ, 2000). The population of *Darwinia foetida* within the proposal footprint is located on the existing road reserve for Great Northern Highway and conservatively considered a moderately disturbed system. This rationale applies to all sample locations.

5.2.2 ANZECC (2000) Lowland River default levels for slightly to moderately disturbed ecosystems

The lowland river criteria presented in Tables 3.3.6 – 3.3.7 of ANZECC and ARMCANZ (2000) has been adopted and applies to surface water locations. The lowland river criteria is considered appropriate as upland rivers are defined as those at >150 m altitude. Using the groundwater monitoring well surveyed co-ordinates as a general guide the road development envelope is < 150 m altitude. Monitoring wells relevant altitude is presented in Appendix A.

5.2.3 DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

As mentioned in Section 2.8, the proposed pipeline corridor is subject to areas of high and moderate risks scores of ASS and as such the adopted guideline applies to all sample locations.

Oxidation of potential ASS materials either naturally, or as a result of construction activities may be occurring if groundwater monitoring fails to meet the criteria presented below in Table 5.2. Exceedance of these criteria indicates that groundwater acidification is occurring, or has already occurred, and the implementation of contingency measures should be undertaken.

Table 5.2 Groundwater acidification trigger levels

Analyte	Trigger level
pH	<6
Total Acidity	>40 mg/L
Total Alkalinity	<60 mg/L
Alkalinity:sulfate ratio	< 5; or 1 unit less baseline values.
Sulfate:chloride ratio	> 0.5
Acidity:alkalinity ratio	>1.0
Dissolved aluminium	> 1 mg/L; or 25% higher than baseline values
Dissolved Iron	> 1 mg/L; or 25% higher than baseline values

6 FIELD ACTIVITIES AND SAMPLING METHODOLOGIES

6.1 Groundwater Well Installation

A total of 54 groundwater monitoring wells were installed along the proposal footprint between 4 January 2016 and 22 January 2016 to assess specific hydrogeological regimes along the proposed project alignment. Monitoring wells were installed in locations along the alignment where excavation and dewatering programs are likely to disturb the superficial aquifer in the vicinity of ecological receptors, disturb high risk areas of acid sulfate soils (ASS) or where an identified beneficial use of groundwater exists. Table 6.1 details groundwater well installation methodology with groundwater monitoring locations presented on Figures 3A to 3F. Appendix B presents detail on the rationale behind initial sampling strategy planning approach with Appendix A presenting groundwater and surface water survey location coordinates and details regarding individual survey location designation.

Groundwater well installation drill logs along with well construction details are attached in Appendix C.

Table 6.1 Groundwater monitoring well construction details

Activity	Details
Date of field activities	4 – 22 January 2016
Review of service plans	Service plans of the area from 'Dial Before You Dig' were reviewed prior to marking out and clearing sampling locations.
Service location	Service location was organised and supervised by Coffey to clear each soil bore and groundwater monitoring well location. Each location was cleared to 2 mbgs using non-destructive digging (NDD) (where geology allowed) prior to mechanical drilling.
Drilling method	Motorised drilling of soil bores was undertaken by Strataprobe Pty Ltd under the supervision of Coffey using solid auger drilling techniques where geology allowed.
Soil logging	Soil type classifications and descriptions are based on the Unified Soil Classification System (USCS). Drilling logs are included in Appendix C.
Well construction	<p>All monitoring wells were installed using 50 mm diameter Class 18 un-plasticised Polyvinyl Chloride (uPVC) with three metres of slotted screen. Screens were installed to allow 2 m of submerged screen below the standing water level (SWL) and 1 m above. Monitoring wells were installed to a depth of between 5 and 7 mbgs depending on where groundwater was encountered.</p> <p>Each monitoring well was backfilled with gravel to 0.5 m above the slotted screen, above which a 0.5 m long bentonite seal was established with the remainder of the hole backfilled with cuttings. Monitoring wells were finished with either a steel monument, or in the case of trafficable areas, a flush-mounted steel gatic cover. Details of individual well installations are shown on the drilling logs in Appendix C.</p>
Well survey	All new groundwater monitoring wells were surveyed for positional co-ordinates to Map Grid of Australia (MGA) and elevation from top of casing to metres above Australian Height Datum (mAHD) by professional surveyors, PGS Hope Pty Ltd. Survey results are included in Appendix A.
Decontamination procedure	Drilling equipment was decontaminated between holes using laboratory grade detergent and scheme water.

Activity	Details
Waste disposal	Soil cuttings generated from the soil investigation were returned to hole. Where surplus soil cuttings were present, cuttings were removed from site by the drilling contractor and disposed of accordingly.

6.2 Groundwater Sampling Methodology

6.2.1 Initial Groundwater Monitoring Bores (Round 1)

A total of 22 existing groundwater monitoring wells were sampled using low flow sampling methodology during the initial round of groundwater monitoring from 14 to 21 December 2015, prior to the installation of the additional monitoring wells described in Section 6.1. During this monitoring round a thorough review of the existing well network (including geographical location, construction details and screen depths) was undertaken. The review determined the existing well network as unsuitable due to inappropriate screen depth (i.e. screens were at a depth where potential 'initial' impact from road construction may not be identified) and as such these monitoring wells were not sampled over the subsequent monitoring events. Due to the differences in depth of the screen and location the results from the initial sampling round are not discussed further within this report.

6.2.2 Groundwater Monitoring Bores

As stated within Section 6.1, a total of 54 monitoring wells were installed for baseline survey purposes, with one pre-existing monitoring well (MW55, previously known as GW5) incorporated into the network. As such, a total of 55 groundwater wells were sampled on a monthly basis from January 2016 to May 2017. Only 27 of the 55 wells make up the study of this report, with 19 monitoring wells making up the study of the Inland Waters Environmental Quality – Hydrological Processes report. The remaining wells have not been used for assessment purposes within either reports. Table 6.2 below details groundwater sampling methodology with groundwater sampling locations presented on Figures 6A to 6F. Calibration certificates are presented in Appendix D.



Table 6.2 Groundwater sampling methodology

Activity	Details
Date of field activities	<p>Round 1: 14 – 21 December 2015</p> <p>Round 2: 27 January – 3 February 2016</p> <p>Round 3: 16 – 23 February 2016</p> <p>Round 4: 15 – 22 March 2016</p> <p>Round 5: 11 – 15 April 2016</p> <p>Round 6: 3 – 9 May 2016</p> <p>Round 7: 21 – 28 June 2016</p> <p>Round 8: 12 – 19 July 2016</p> <p>Round 9: 15 – 25 August 2016</p> <p>Round 10: 20 September – 4 October 2016</p> <p>Round 11: 24 October – 1 November 2016</p> <p>Round 12: 22 November – 28 November 2016</p> <p>Round 13: 13 – 19 December 2016</p> <p>Round 14: 17 – 24 January 2017</p> <p>Round 15: 15 – 21 February 2017</p> <p>Round 16: 13 – 20 March 2017</p> <p>Round 17: 10 – 18 May 2017</p>
Sample locations	<p>Well locations were chosen to cover the development footprint of the project, in order to develop a comprehensive groundwater quality baseline data set, including static water levels, across the development footprint such that future project environmental performance can be monitored.</p> <p>The monitoring sites used for the baseline monitoring survey are shown in Figures 3A to 3F. It is anticipated the monitoring sites used for data collection as part of the baseline program will continue to be used throughout the life of the project, wherever possible.</p>
Well gauging	<p>The groundwater monitoring wells for the first six rounds were gauged using an oil/ water interface probe (IP) to measure the SWL, presence of any LNAPL and end of hole measurements. The IP was decontaminated between each monitoring well. After the initial six rounds it was deemed not necessary to detect presence of any LNAPL as no wells had contributed signs of LNAPL. As such from round seven to 17 an air/ water interface probe (IP) to measure the SWL, presence of any LNAPL and end of hole measurements. The IP was decontaminated between each monitoring well.</p>
Field Water Quality	<p>Water quality parameters (pH, oxidative/reduction potential, DO, temperature and electrical conductivity) were taken at all designated monitoring wells. The water quality meter (SmartTroll) was lowered into the water column of the well after gauging and retrieval of the Hydrasleeve to an approximate depth of 0.5m below water.</p> <p>Calibration certificates for the water quality meter can be found in Appendix D.</p> <p>Field test in the form of total acidity and alkalinity were also undertaken for all monitoring wells with sufficient water and conditions in accordance with the SOP found in Appendix E.</p>

Activity	Details
Sampling method	<p>Hydrasleeves Standard Operating Procedure (SOP) is provided in Appendix F. Collection of QC samples included one intralab duplicate and one interlab duplicate (at a rate of one per twenty samples), collection of one combined field and rinsate blank (one per day of fieldwork) and one transport blank (one per day of fieldwork).</p> <p>Intra and interlab duplicates were sampled via an additional Hydrasleeve below the primary Hydrasleeve in dedicated monitoring wells. The water obtained from the Hydrasleeves were mixed to ensure a representative sample was taken.</p>
Decontamination procedure	<p>All non-disposable sampling equipment (IP and water quality meter) were decontaminated with laboratory grade detergent and rinsed with scheme water between wells. Dedicated nitrile gloves and disposable Hydrasleeves were used for each sample location.</p>
Sample preservation	<p>Samples were collected in laboratory supplied bottles containing appropriate preservatives and immediately stored in an insulated cooler chilled with ice upon sampling and ice bricks during air freight to the laboratory. Samples collected for analysis of metals were lab filtered (0.45 µm). Samples were submitted to the National Association of Testing Authorities (NATA) accredited laboratory accompanied by chain of custody (COC) documentation which is included in Appendix G. Analytical laboratory results can be found in Appendix H.</p>
Waste disposal	<p>Groundwater recovered during the purging of monitoring wells was returned to ground.</p>

6.3 Surface Water Sampling Methodology

6.3.1 Initial Surface Water Monitoring (Round 1 and 2)

A total of five surface water sample locations were sampled during the initial sampling event (14 to 21 December 2015) and were taken on an opportunistic basis (encountered surface water locations, during the sampling event). During the round two sampling event, the monitoring wells sampled prior to the first event had increased significantly and as such eight sample locations were sampled based on an opportunistic basis.

6.3.2 Surface Water Monitoring (Round 3 to 13)

From monitoring rounds 3 to 13 a total of 21 surface water locations (3 samples taken at each SWL, only 2 at SWL15) were sampled on a monthly basis from December 2015 to May 2017 (depending on presence or absence of water). The 21 surface water locations were selected based a variety of considerations such as:

- Locations where acid sulphate soils are present and may be potentially disturbed;
- Locations where habitat modification is proposed through clearing causing increased sediment loading and increased turbidity within wetlands during construction (stormwater and drainage discharges).
- Locations where fragmentation of hydraulic connectivity may occur; and
- Potential for diminished water quality within wetlands in future where wetlands are fragmented and/or buffer zones reduced (e.g. changes to levels of nutrient, organic compounds, suspended solids, toxic compounds and salinity).

Table 6.3 details surface water sampling methodology with sampling locations presented on Figures 3A to 3F. Calibration certificates are presented in Appendix D.

6.3.3 Surface Water Monitoring (Round 14)

In response to the OEPA request an additional surface water sample location (SWL22) was included into the monitoring program from round 14 to 17. Only 18 of the 22 surface water locations make up the study of this report, with 3 surface water locations making up the study of the Inland Waters Environmental Quality – Hydrological Processes report. The remaining wells have not been used for assessment purposes within either reports.

Table 6.3 Surface water sampling methodology

Activity	Details
Date of field activities	<p>Round 1: 14 – 21 December 2015</p> <p>Round 2: 27 January – 3 February 2016</p> <p>Round 3: 16 – 23 February 2016</p> <p>Round 4: 15 – 22 March 2016</p> <p>Round 5: 11 – 15 April 2016</p> <p>Round 6: 3 – 9 May 2016</p> <p>Round 7: 21 – 28 June 2016</p> <p>Round 8: 12 – 19 July 2016</p> <p>Round 9: 15 – 25 August 2016</p> <p>Round 10: 20 September – 4 October 2016</p> <p>Round 11: 24 October – 1 November 2016</p> <p>Round 12: 22 November – 28 November 2016</p> <p>Round 13: 13 – 19 December 2016</p> <p>Round 14: 17 – 24 January 2017</p> <p>Round 15: 15 – 21 February 2017</p> <p>Round 16: 13 – 20 March 2017</p> <p>Round 17: 10 – 18 May 2017</p>
Sampling locations	<p>Surface water sampling locations were chosen to cover the development footprint of the project, in order to develop a comprehensive surface water quality baseline data set, across the development footprint such that future project environmental performance can be monitored.</p> <p>To ensure a representative and comparable baseline dataset is collected from within surface waters, three samples from each sampling location was taken, with the exception of SWL15 in which only two were taken.</p> <p>The monitoring sites used for the baseline monitoring survey are shown in Figures 3A to 3F. It is anticipated the monitoring sites used for data collection as part of the baseline program will continue to be used throughout the life of the project, wherever possible.</p> <p>Although not officially surveyed, GPS locations of the surface water locations were taken in the field using a Garmin GPSmap 62s, and can be found in Appendix A along with the survey results of the monitoring well locations.</p>

Activity	Details
Field Water Quality	<p>Water quality parameters (pH, oxidative/reduction potential, DO, temperature and electrical conductivity) were taken at all designated sampling locations. The water quality meter (SmartTroll) was lowered gently into the surface water to an approximate depth of 0.15m (where possible).</p> <p>Calibration certificates for the water quality meter can be found in Appendix D.</p> <p>Field test in the form of total acidity and alkalinity were also undertaken for all monitoring locations with sufficient water and conditions in accordance with the SOP found in Appendix E.</p>
Sampling method	<p>Surface water sampling was undertaken using a sampling pole with attached dedicated container to collect samples from the centre of each lake. The bottle was immersed to a depth of approximately 15 cm (where possible), laying it flat with its mouth towards the flow of the water. Water was then decanted directly into laboratory supplied sample containers. Note: for metal analysis, bottles were not rinsed and were filled by decanting from another, rinsed bottle.</p>
Decontamination procedure	<p>Water monitoring equipment such as the multi parameter water meter was rinsed with DI water between sample locations. The sample containers used with the sample pole were replaced between sampling locations to prevent cross contamination. Dedicated disposable nitrile gloves were used during the collection of each sample.</p>
Sample preservation	<p>Samples were collected in laboratory supplied bottles containing appropriate preservatives and immediately stored in an insulated cooler chilled with ice upon sampling and ice bricks during air freight to the laboratory. Samples collected for analysis of metals were lab filtered using 0.45 µm filters. Samples were submitted to the National Association of Testing Authorities (NATA) accredited laboratory accompanied by chain of custody (COC) documentation which is included in Appendix G. Analytical laboratory results can be found in Appendix H.</p>
Waste disposal	<p>Surface water samples taken for field water quality analysis were returned to each location after sampling.</p>

6.4 Laboratory Analysis

The laboratories used for this investigation were MGT Eurofins (MGT) and ALS Global (ALS), which are NATA registered laboratories for the specified analyses. MGT was used as the primary laboratory where all primary, duplicates, combined rinsate and field blanks and transport blanks were analysed. ALS was used as the secondary ('check') laboratory where all triplicate samples were analysed. Analytical schedules are summarised in Table 4.1.

7 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

7.1 Alignment Geology

A significant geotechnical and hydrogeological site investigation has been completed as part of the NorthLink WA project. The study included drilling and installation of monitoring wells and single well hydraulic (slug) testing (Coffey, 2015). The investigation indicated:

- Geological Domains 1 and 2 were found to have similar composition with Bassendean Sand overlying sandy Guildford Formation.
- Geological Domain 3 was found, as expected, to consist mainly of clay and sand-dominated Guildford Formation underlying either a thin layer of Bassendean Sand or colluvial sand. The clay-dominated Guildford Formation was generally found to exist above the sand-dominated Guildford Formation.

Given the size and variability of activities undertaken at the site, it should be noted that the observed geology was highly variable across the site, specifically in relation to the content of fill material used. The local geology encountered during the January 2016 drilling program is largely consistent with the regional geology detailed above.

7.2 Hydrogeology

Groundwater gauging data collected during field activities has been presented in Table 1. Site-specific hydrogeological information is summarised in Table 7.2 based on the Aquatic Ecosystem groundwater monitoring wells. Groundwater levels in mAHD (derived from static water levels) for each monitoring well and monitoring round have been presented in Graphs 1-7. Considering the data set associated with round 1 did not include the additional wells, the associated data has not been included in Table 7.2.

Table 7.2 Hydrogeological and local groundwater regime

Item	Description
Depth to groundwater	<p>Round 5 (Post Summer 2016)</p> <p>SWLs recorded in April ranged from 0.052 mTOC (MW42) to 7.405 mTOC (MW30). Corrected water elevations ranged between 27.084 mAHD (MW1) to 55.305 mAHD (MW42).</p> <p>Round 11 (Post Winter 2016)</p> <p>SWLs recorded in October ranged from 0.470 mTOC (MW42) to 6.662 mTOC (MW30). Corrected water elevations ranged between 27.830 mAHD (MW3) to 54.890 mAHD (MW42).</p> <p>Round 17 (Post Summer 2017)</p> <p>SWLs recorded in April ranged from 0.630 mTOC (MW42) to 6.995 mTOC (MW30). Corrected water elevations ranged between 27.585 mAHD (MW3) to 54.730 mAHD (MW42).</p>
Groundwater occurrence	Groundwater investigated beneath the site is present within a shallow unconfined sandy aquifer situated within Bassendean Sands comprising a sub-group of the Leederville Formation (Davidson, 1995).

Item	Description
Gradient and groundwater flow direction	Regional groundwater flow is inferred to be to the east within the southern portion of the alignment and through the Gngara Mound and to the southwest in the northern portion of the alignment. Gauging data collected during baseline survey indicates that locally along the alignment groundwater flow direction is predominantly to the south, south-east. Figures 7 to 9 present groundwater contours across the site during the post winter and summer events.
Groundwater discharge location	Groundwater is likely to discharge to local waterways (i.e. Ellen Brook) and wetland systems prior to entering the Swan-Avon River.
Phase separated hydrocarbons (PSH) and LNAPL	PSH and LNAPL were not encountered during the investigation.
Hydraulic conductivity	Based on the observed lithology/hydraulic conductivity estimates (Davidson, 1995) the estimated hydraulic conductivity (K) beneath the site is approximately 8.2 m/day (fine to medium grained SAND) to 4 m/day (Silty SAND).
Effective porosity	Based on typical lithology/effective porosity estimates (Kruseman and de Ridder, 1991), the effective porosity (σ) beneath the site is approximately 0.23 (fine SAND).

7.2.1 Surface Water Field Parameters

Surface water quality parameters were measured during field activities during the 17 monitoring rounds are presented in Table 2. Surface water sampling locations were refined between monitoring rounds two and three with sampling locations presented on Figures 3A to 3F. Surface water quality data is summarised in Appendix J.

7.2.2 Groundwater Field Parameters

Groundwater quality parameters were measured during field activities conducted during the baseline survey are presented in Table 1 for all monitoring. Groundwater quality data is summarised in Appendix J.



8 LABORATORY ANALYTICAL RESULTS

Seventeen monitoring rounds have been conducted as part of the baseline monitoring program. However, groundwater samples collected from Round 1 have not been included in the overall dataset due to the monitoring wells having inappropriate well screening levels and therefore these groundwater wells were not monitored again over the course of the program and not discussed further within this report.

As discussed previously, 27 of the original monitoring wells have been used for the baseline assessment along with 19 of the original surface water locations. Seventeen events have been undertaken at the adopted locations (depending on presence of water). The analysis water quality parameters and analytical results has been undertaken primarily for the purpose of characterising baseline groundwater and surface water geochemistry and to allow identification of potential ASS disturbance through construction activities.

Samples collected during the monitoring rounds were sent to NATA accredited laboratories for analysis of the parameters specified in Section 5.2. Supporting COC documentation is presented in Appendix G and laboratory certificates of analysis attached in Appendix H. Groundwater analytical results screened against the adopted criteria can be found in Tables 3 to 10 and surface water analytical results screened against the adopted criteria can be found in Tables 11 to 14. Key results have been plotted to assess trends and are presented in Appendix I in Graphs 1 – 92.

A review of laboratory analytical results exceeding the adopted ILs can was undertaken and due to the large size of the overall data set the exceedances have been summarised in Appendix J.

9 QUALITY CONTROL & QUALITY ASSURANCE

9.1 Field Method Validation

A summary of field method validation undertaken during the investigation is detailed in Table 9.1 below.

Table 9.1 Field Method Validation


Requirement	Yes/ No	Comments
Decontamination of equipment	Yes	All sampling equipment that was not disposable (IP and water quality meter) were decontaminated between sampling events using laboratory grade phosphate free detergent and rinsed with DI water. Weights and clips associated with the Hydrasleeve sampling train remained in the sampled well, thus no decontamination was required.
Equipment Calibration	Yes	The water quality meter used to undertake field readings was calibrated to factory conditions prior to each sampling event, which was undertaken by a third party.
Sample collection	Yes	Together with decontaminated equipment above, dedicated nitrile gloves and Hydrasleeves, along with new laboratory supplied containers were used during sampling. When surface water samples were collected dedicated sample containers were used.
Sample preservation	Yes	All samples were preserved correctly and stored in insulated coolers prior to arrival at the laboratory. Laboratory SRN indicate that all samples were on a 'cool-down-cycle' upon receipt.
Waste disposal	Yes	Water samples taken for field water quality analysis were returned to each location after sampling.

9.2 Duplicate/ triplicate samples

A blind duplicate and triplicate sample was collected per 20 primary samples during the investigation to assess the laboratory precision. The precision measurement is determined using the relative per cent difference (RPD) between the original and duplicate sample results. The RPD is calculated as follows: $[(X1 - X2) / ((X1 + X2)/2)] * 100$.

Generally, it is recommended that RPD is less than 30 per cent (where results are greater than ten times the LOR) to 50 per cent (where results are less than ten times the LOR) (Standards Australia, 2005). The groundwater RPD calculations for this investigation can be found in Tables 15 and 17, with surface water RPD calculations in Tables 18 to 20.

Where RPDs were outside the acceptable range, sampling procedures, laboratory analytical methods and laboratory results were investigated. A detailed review of analytical results with RPD exceedances indicates that all unacceptable results can be attributed to one or more explanations. RPD review can be found in Tables 21 and 22.



In summary, variations were detected between primary samples and field duplicates. The calculated RPD values are not considered to affect the integrity of the results as the highest concentration has been used for interpretation purposes as a conservative approach.

9.3 Field Blanks

One field blank sample was prepared for everyday of sampling. The blank was prepared by passing laboratory supplied deionised water into clean laboratory supplied containers in the field during the investigation. In addition one transport blank was also prepared per a batch of samples. Blank samples were analysed for metals.

A total of 104 field blanks were taken along with 103 transport blanks. The analytical laboratory blank results can be found in Table 23, along with QC Log in Table 24.

A total of 8 blank samples (QC15, QC23, QC24, QC32, QC33, QC252, QC271 and QC329) returned metal concentrations greater than the laboratory LOR. Given the majority of exceedance occurred during round 1 and 2 this can be attributed to a bad batch of DI water. Overall the integrity of blank results indicates that field conditions and transport procedures have not impacted on the integrity of results.

9.4 Laboratory Internal QC Check

The laboratory quality control report also includes a summary of the laboratory in-house quality control definitions and tests. Tests conducted by the laboratory include analysing a duplicate sample and calculated the RPD, analysing a matrix spike and then determine the recovery of the spike and analyse a certified reference material.

A review of the laboratory internal checks per a round of monitoring can be found in Appendix K.

The review found that the laboratory data is of an acceptable quality for interpretation and assessment purposes.

9.5 QA/QC summary

The field method validation and laboratory QA/QC measures employed throughout the assessment have enabled the quality of field sample collection and laboratory analysis procedures to be examined. Based on the above, the data is considered of acceptable quality for interpretation and environmental assessment of the site.



10 DISCUSSION

10.1 Sample Locations

A total of 55 groundwater monitoring wells and 22 surface water locations had been selected as part of the final monitoring program which were monitored on a regular basis for approximately 16 months. The original sampling design was conducted prior to the CEMP and the BSP and as such this report does not cover all sample locations for interpretation purposes. The derived sample locations related to this report can be found in Section 5.1, some of the remaining locations have been used in the Inland Waters Environmental Quality – Hydrological Processes report. The remaining data from sample locations not used for assessment or interpretation purposes can be found in Tables 25 to 42.

10.2 Groundwater Levels

Groundwater levels within the proposal footprint experience a seasonal high following the wet season (around September/October) and are at a seasonal low around April/May (Graphs 1- 7). The extent of seasonal variation depends on the hydraulic conductivity of the geological unit, but generally a seasonal fluctuation of about 2 to 3 m is expected in areas of clay (i.e. Guildford Formation) and about 1 m to 1.5 m in Bassendean Sands (Golder, 2014).

Calculation of groundwater RLs in mAHD has been undertaken to assess groundwater interception levels in relation to proposed infrastructure invert levels along the alignment. Levels range from approximately 27 mAHD at the most southern section of the alignment (MW01) to 55 mAHD at MW42 in the northern portion of the alignment near Muchea within the intersection area of the series of mapped Mound Springs SCP TEC buffer zones.

Groundwater levels measured in MW42 have periodically registered groundwater levels greater than the ground height. The reason for this is identified as the well location intercepting groundwater under pressure within an area of the Mound Springs SCP TEC buffer zones characterised by continuous discharge of groundwater in raised areas of peat and other organic deposits.

Groundwater contouring undertaken along the alignment and determination of groundwater flow direction has been present in Figures 7 to 9 during the post winter and summer events.


10.3 Analytical Groundwater Results

Groundwater trends have been visually graphed for key parameters and can be found in graphs 8 to 70.

10.3.1 Trace Metals and Metalloids

Metal concentrations have been assessed to determine in groundwater conditions and if the release of metal concentrations has occurred as a result of disturbing ASS from excavation or dewatering activities.

All 27 monitoring wells returned average concentrations exceeding the ANZECC Freshwater (95% protection level) for slightly too moderately disturbed wetland ecosystems for total and dissolved Aluminium, with 7 wells also exceeding the DER (2015) criteria for dissolved Aluminium. Maximum concentrations of dissolved Aluminium are identified as being greater than 2 orders of magnitude above the ANZECC criteria and may present the potential for observation of acute toxicity effects to be occurring in wetlands with the potential of groundwater discharge.



Other dissolved metals found to have average concentrations exceeding the adopted ANZECC criteria were Cadmium (MW52), Copper (MW5, MW6, MW10, MW31, MW41 and MW52), Lead (MW11), Nickel (MW52), Selenium (MW52) and Zinc (MW2, MW30, MW38, MW41, MW50 and MW52).

10.3.2 ASS Indicators

ASS indicator parameters provide a measure of waters vulnerability to acidification via disturbance and oxygenation. Typically activities such as dewatering present the mechanism for alterations of groundwater quality to occur and result in acidification and mobilisation of trace metals and metalloids.

pH conditions across the alignment vary between neutral to strongly acidic conditions. 16 of the 27 monitoring wells returned average pH concentrations below the lower DER (2015) criteria of 6, with seven of the 16 wells averaging pH concentrations below 4.5 indicating evidence of acidification.

Twenty of the 27 monitoring wells returned average concentrations below the adopted DER (2015) criteria of 60 mg/L for total Alkalinity, indicating Alkalinity is heavily depleted and has most likely been used in the system to buffer acidification that has occurred historically.

Sulfate concentrations are relatively low however may be attributed to historical acidification depleting sulfide minerals in soil and reducing the volume to be oxidised and converted to sulfate, which readily partitions into groundwater and transported through the groundwater aquifer.

As such, evidence suggests that portions of the alignment are already subject to acidification or groundwater being susceptible to acidification via disturbance and oxygenation from activities such as dewatering. Low pH, alkalinity and acidity concentrations along with low alkalinity ratios and high dissolved Aluminium concentrations are key indicators for historical acidification. Depleted alkalinity along the alignment is indicative of groundwater that is unable to maintain a stable pH range following groundwater table fluctuations.

10.3.3 Nutrients

Nutrient concentrations have been assessed to determine whether land use activities have resulted in elevated concentrations of nitrogen and phosphorus to be present in waters adjacent to the project footprint.

Average Ammoniacal Nitrogen concentrations in groundwater are below the ANZECC Freshwater (95% protection level) however concentrations of Total Nitrogen (13 wells) were elevated above the threshold criteria most likely indicating that a source of inorganic nitrogen is present in the system.

Average total Phosphorous concentrations were detected (4 wells) marginally elevated above the adopted ANZECC Freshwater (95% protection level) of 0.6 mg/L. Average reactive Phosphorous concentrations were above the adopted ANZECC Freshwater (95% protection level) of 0.03 mg/L in all the 27 monitoring wells as the laboratory LOR was higher than the guideline criteria.

10.4 Presence of Surface Water

A total of 18 surface water locations were monitored as part of this report, of which four were not accessible and five which were permanently dry. Surface water levels were affected by seasonal fluctuations. To ensure a representative and comparable baseline dataset is collected from within surface waters, three samples from each sampling location was taken, with the exception of SWL15 in which only two were taken.

10.5 Analytical Surface Water Results

Surface water trends have been visually graphed for key parameters and can be found in graphs 71 to 92.



10.5.1 Trace Metals and Metalloids

Six of the 18 surface water locations returned average concentrations an order of magnitude more than the adopted ANZECC criteria for dissolved aluminium. However, all wells returned dissolved aluminium concentrations below the DER (2015) criteria.

Other dissolved metals found to have average concentrations exceeding the adopted ANZECC criteria were Copper (SWL17-2), Iron (SWL20) and Zinc (SWL1, SWL4, SWL15 and SWL16-3).

Dissolved metals below the adopted criteria for all monitoring wells included Arsenic, Cadmium, Lead, Manganese, Mercury, Nickel and Selenium.

10.5.2 ASS Indicators

pH conditions across the alignment vary between neutral to strongly acidic conditions. SWL (SWL4-1, SWL5-1, SWL15 and SWL17) returned average pH concentrations below the lower adopted ANZECC criteria of 6.5 and the DER (2015) criteria of 6 (with the exception of SWL4-1). SWL15 (a drain) and SWL17 (groundwater released by spring) average pH concentrations below 5 indicating evidence of groundwater acidification.

Average total Alkalinity concentrations were below the adopted DER (2015) criteria of 60 mg/L for the 9 SWLs, and indicate a lower buffering capacity, only one SWL (17) exceeded the adopted DER (2015) criteria for acidity.

10.5.3 Nutrients

Average Ammoniacal Nitrogen concentrations in surface water were below the ANZECC Freshwater (95% protection level) however concentrations of Total Nitrogen (SWL15, SWL16, SWL17 and SWL20) were elevated above the threshold criteria most likely indicating that a source of inorganic nitrogen is present in the system.

Average total Phosphorous concentrations were detected in all surface water bodies (9) with average concentrations exceeding the adopted ANZECC Lowland criteria of 0.065 mg/L (with the exception of SWL1, SWL1-3). Only SWL16 exceeded the ANZECC Freshwater (95% protection level) of 0.6 mg/L.

10.6 Compliance with the baseline survey report

Overall the baseline survey program was conducted in line with the CEMP and BSP. Quality assurance and quality control review indicates the analytical data to be a suitability quality for interpretation purposes and in addition works were carried out by suitably trained environmental scientist who conducted sampling activities in line with relevant guidelines and standards. The 16 sampling events used for assessment purposes (taken on a monthly basis) has allowed for a robust groundwater and surface water baseline dataset, across the proposal footprint.

Although 24 months' worth of data was not collected, to complete trigger and threshold criteria in direct guidance with ANZECC (2000), trigger and threshold rules were able to be developed in general guidance with ANZECC (2000) and still allows the future project environmental performance to be monitored and measured against key parameters. Information detailing how the interim site specific trigger and threshold criteria has been set can be found in Appendix M.

Surface water flows was not considered as part of the works, however has been undertaken an airborne LiDAR survey. These assessments of surface water flow direction and local catchments for each of the environmental values identified have been presented and discussed in the Condition EMP.



10.7 Trigger and Threshold values

As discussed in Section 1.2 the purpose of undertaking the baseline assessment was to determine the water quality along the proposed footprint as seen in Figure 1. Water quality along the footprint varies significantly based on the water quality and analytical data collected, exceeding adopted criteria for both groundwater and surface water in a number of locations. Where water quality parameters and analytical data has exceeded the adopted guidelines, site specific trigger and threshold criteria have been calculated to determine if groundwater quality is degraded during and post construction.

Interim trigger and threshold criteria been developed based on the first 11 month period and are presented within the Draft Flora and Vegetation Environmental Inland Waters Quality – Hydrological Processes – Condition Environmental Management Plan (Coffey, 2016). Upon the completion of this baseline survey report, it is proposed that the interim threshold and trigger criteria are updated.



11 CONCLUSIONS AND RECOMMENDATIONS

MRWA proposes to construct a new 38 km section of the Perth-Darwin National Highway (Swan Valley Section) (see Figure 1) extending between Malaga and Muchea in Western Australia. The project consists of the construction of a dual carriageway highway which will connect the intersection of Tonkin Highway and Reid Highway in the south with Great Northern Highway and Brand Highway in the north.

In November 2015, MRWA commissioned the pre-construction baseline groundwater and surface water quality assessment. Initial works identified critical data gaps within the existing groundwater monitoring network, including the absence of monitoring wells in key locations. To provide adequate coverage of groundwater resources, a suitable groundwater monitoring network was installed in January 2016.

A total of 55 groundwater monitoring bores and 22 surface water locations were monitored as part of the overall program. In alignment with Ministerial Statement No. 1036 the baseline survey groups have been separated into two separate groups with this report focusing on the Aquatic Ecosystems Group.

It is understood that construction of the road started on June 12, 2017.

Sampling and analysis activities were implemented to assess the baseline conditions of groundwater and surface water values along the project alignment and adjacent to sensitive ecological receptors including:

1. The major surface water features intercepted by the project footprint included both the Ellen Brook and Bennett Brook catchments. The alignment also intercepts two other minor catchments referred to as Henley Brook and St Leonards Creek catchments.
2. Twenty CCWs occur along the length of the proposal footprint. Seven of the CCW are located within or partially within the proposal footprint. The remaining CCWs are to varying degrees within 75 m of the proposal footprint.
3. A number of occurrences of Mound Springs SCP adjacent to the project footprint. The Mound Springs SCP TEC is characterised by continuous discharge of groundwater in raised areas of peat, which provide a stable, permanently moist series of microhabitats.
4. The Gngara Mound which is currently the most significant source of groundwater for the Perth region as well as a vital part of groundwater dependent ecosystems. The project intercepts a number of priority areas and protection zones of the GUWPCA including:
 - a) Priority 1 area – areas that are managed to ensure no degradation of the drinking water source occurs. These areas contain the greatest restrictions on land use and activity and aim to avoid all risks to the drinking water source.
 - b) Priority 3 area – areas where management of risk to water sources from catchment activities are targeted. These are principally areas where existing land use co-exists with water supply sources.
 - c) Eight Wellhead Protection Zones (WHPZ) – circular zones established around groundwater production wells to protect drinking water sources from contamination. In Priority 1 areas WHPZ have a radius of 500 m, in Priority 2 and 3 areas the radius is 300 m. Special conditions, such as restrictions on storage and use of chemicals, may apply within these zones (DOW, 2006c).



11.1 Conclusions

Groundwater levels within the proposal footprint experience a seasonal high following the wet season (around September/October) and are at a seasonal low around April/May. Calculation of groundwater RLs in mAHD range from approximately 27 mAHD at the most southern section of the alignment (MW01) to 55 mAHD at MW42.

Groundwater levels measured in MW42 have periodically registered groundwater levels greater than the ground height. The reason for this is identified as the well location intercepting groundwater under pressure within an area of the Mound Springs SCP TEC buffer zones characterised by continuous discharge of groundwater in raised areas of peat and other organic deposits.

Trace metals and metalloids indicate that aluminium, cadmium and zinc are commonly elevated within groundwater resources along the alignment. Surface water bodies are generally buffered from elevated trace metals however exhibit soluble aluminium concentrations in excess of the ANZECC Freshwater (95% protection level) criteria.

Evidence suggests that portions of the alignment are already subject to acidification or groundwater is readily susceptible to acidification via disturbance and oxygenation from activities such as dewatering. Low pH, alkalinity and acidity concentrations along with low alkalinity ratios and high dissolved Aluminium concentrations are key indicators for this. Depleted alkalinity along the alignment is indicative of groundwater that is unable to maintain a stable pH range following groundwater table fluctuations.

Nutrient concentrations indicate that low levels of ammoniacal nitrogen is present however elevated total nitrogen levels indicate a possible source of inorganic nitrogen is present in the system.

Overall the baseline survey program was conducted in line with the CEMP and BSP. Quality assurance and quality control review indicates the analytical data to be a suitability quality for interpretation purposes.

11.2 Recommendations

The following recommendations are made with respect to the baseline surface and groundwater monitoring program:

1. Update the interim site specific trigger and threshold criteria for key water quality parameters to provide a set of assessment levels such that data will include seasonal high and lows and that the future project environmental performance can be monitored and measured against key parameters.

Details relating to determining the site specific trigger and threshold criteria can be found in Appendix M.

12 ABBREVIATIONS AND UNITS

Abbreviation	Definition
°C	Degrees Celsius
Al	Aluminium
ALS	ALS Global
ANZECC	Australian and New Zealand Guidelines for Fresh and Marine Water Quality Guidelines
As	Arsenic
AS	Australian Standards
ASS	Acid Sulfate Soils
ASSDMP	Acid Sulfate Soil and Dewatering Management Plan
AWQG	Australian Water Quality Guidelines
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
BSP	Baseline Survey Plan
CaCO ₃	Calcium Carbonate
CCW	Conservation Category Wetland
Cd	Cadmium
CEMP	Condition Environmental Management Plan
cm	Centimetre
COC	Chain of Custody
Cr	Chromium
Cu	Copper
DER	Department of Environment Regulation
DO	Dissolved Oxygen
DOW	Department of Water
DQO	Data Quality Objectives
EC	Electrical Conductivity
EPP Lakes Policy	Environmental Protection (Swan Coastal Plain Lakes) Policy 1992
Fe	Iron
FRP	Filterable Reactive Phosphorus
GIL	Groundwater Investigation Levels
GUWPCA	Gnangara Underground Water Pollution Control Area
Hg	Mercury
IP	Interface Probe



Abbreviation	Definition
L	Litre
LNAPL	Light Non-Aqueous Phase Liquid
LOR	Limit Of Reporting
m	Metre
mAHD	metre (Australia Height Datum)
mbgl	metres below ground level
mbgs	metres below ground surface
mg	Milligram
MGA	Map Grid of Australia
MGT	Eurofins MGT
Mn	Manganese
MRWA	Main Roads Western Australia
mS	Millisiemen
MUW	Multiple Use Wetland
mV	Millivolt, a unit of electric potential
MW	Monitoring Well
N	Nitrogen
NATA	National Association of Testing Authorities
NDD	Non-Destructive Digging
NEPM	National Environmental Protection Measure
NEPC	National Environment Protection Council
Ni	Nickel
NO ₂	Nitrite
NO ₃	Nitrate
NO _x	Oxides of Nitrogen
P	Phosphorus
Pb	Lead
PDWSA	Public Drinking Water Source Area
PEC	Priority Ecological Communities
PER	Public Environmental Review
PSH	Phase-Separated Hydrocarbons
QA	Quality Assurance
QC	Quality Control
REW	Resource Enhancement Wetland



Abbreviation	Definition
RL	Relative level
RPD	Relative Percentage Difference
S	Sulfur
SCP	Swan Coastal Plain
Se	Selenium
SOP	Standard Operating Procedure
SWL	Standing Water Level
SWL - 1	Surface Water Location - number
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
TN	Total Nitrogen
TRH	Total Recoverable Hydrocarbons
TTA	Total Titrable Acidity
uPVC	un-Plasticised Polyvinyl Chloride
USCS	Unified Soil Classification Scheme
WHPZ	Wellhead Protection Zone
Zn	Zinc



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13 REFERENCES

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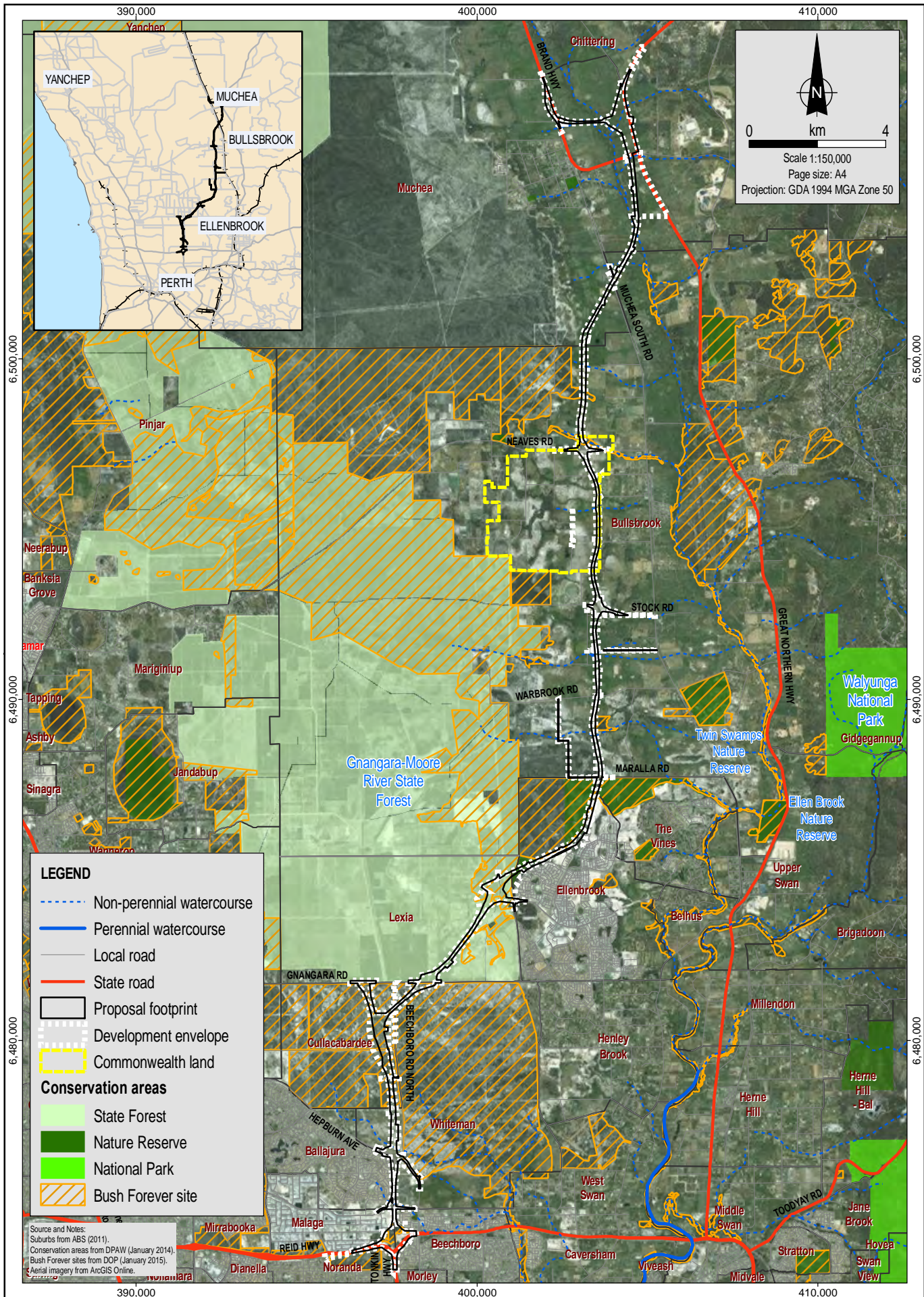
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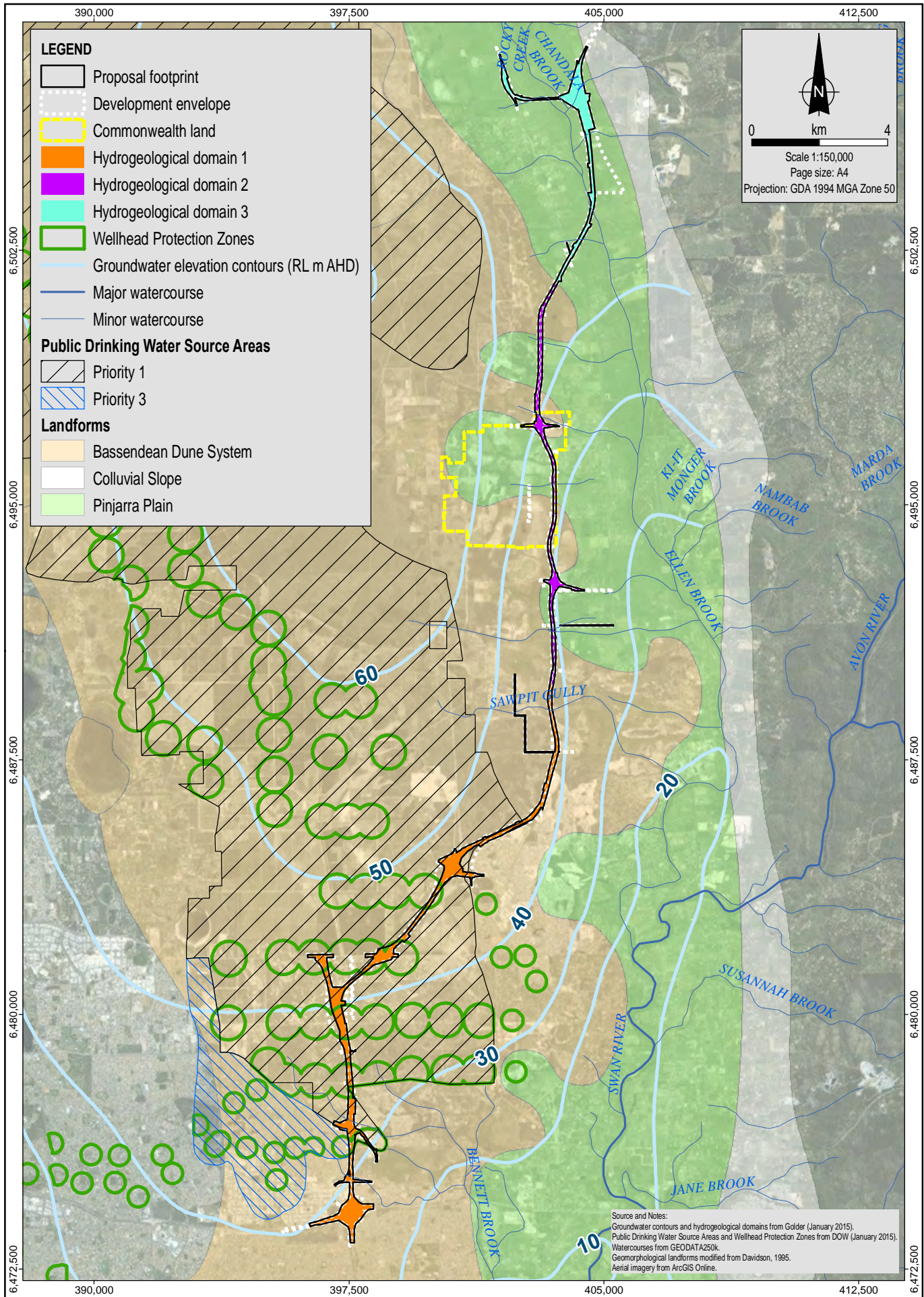
National Environment Protection Council 1999 (amended 2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM), Schedule B2: Guideline on Data Collection, Sample Design and Reporting.



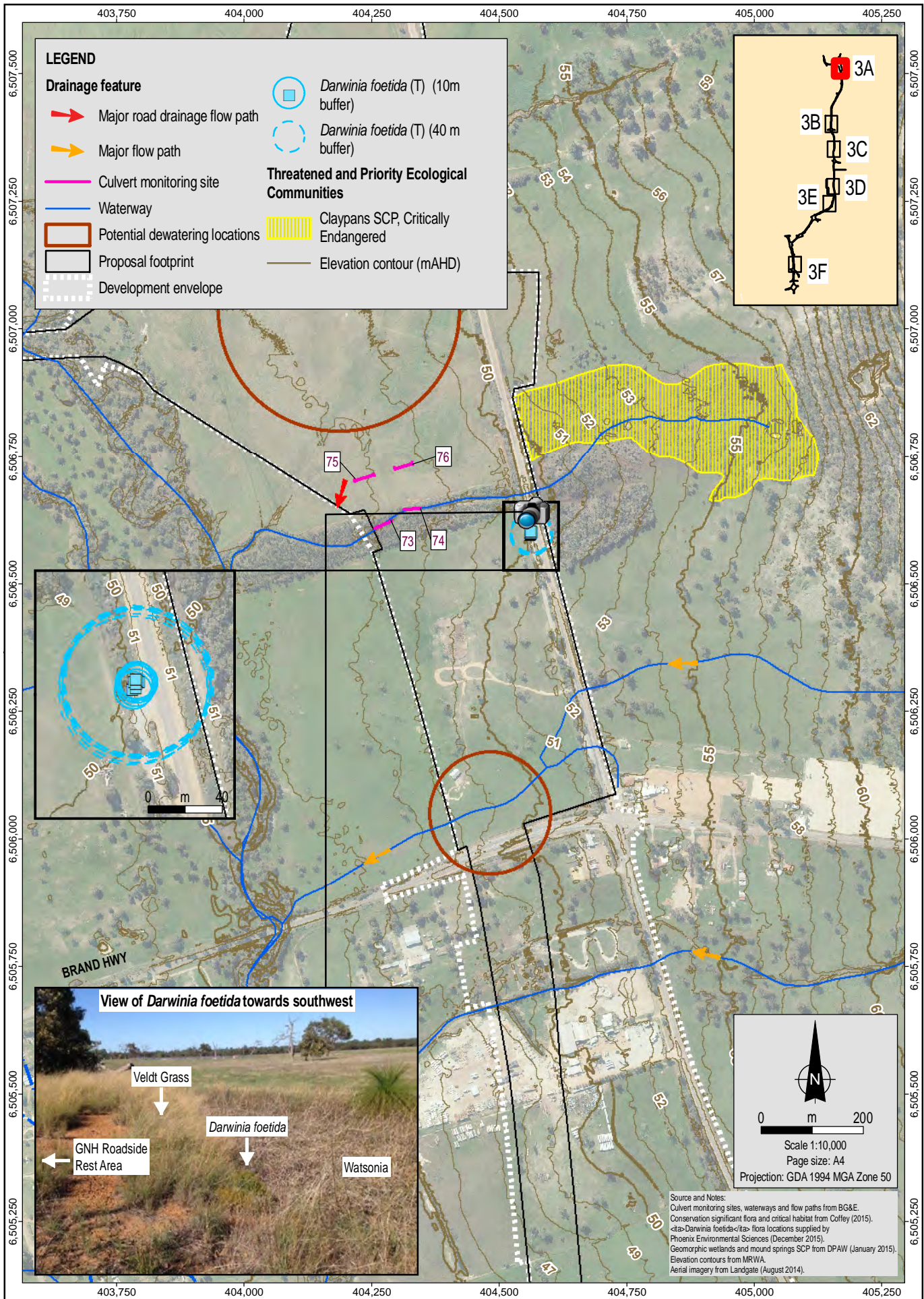
FIGURES

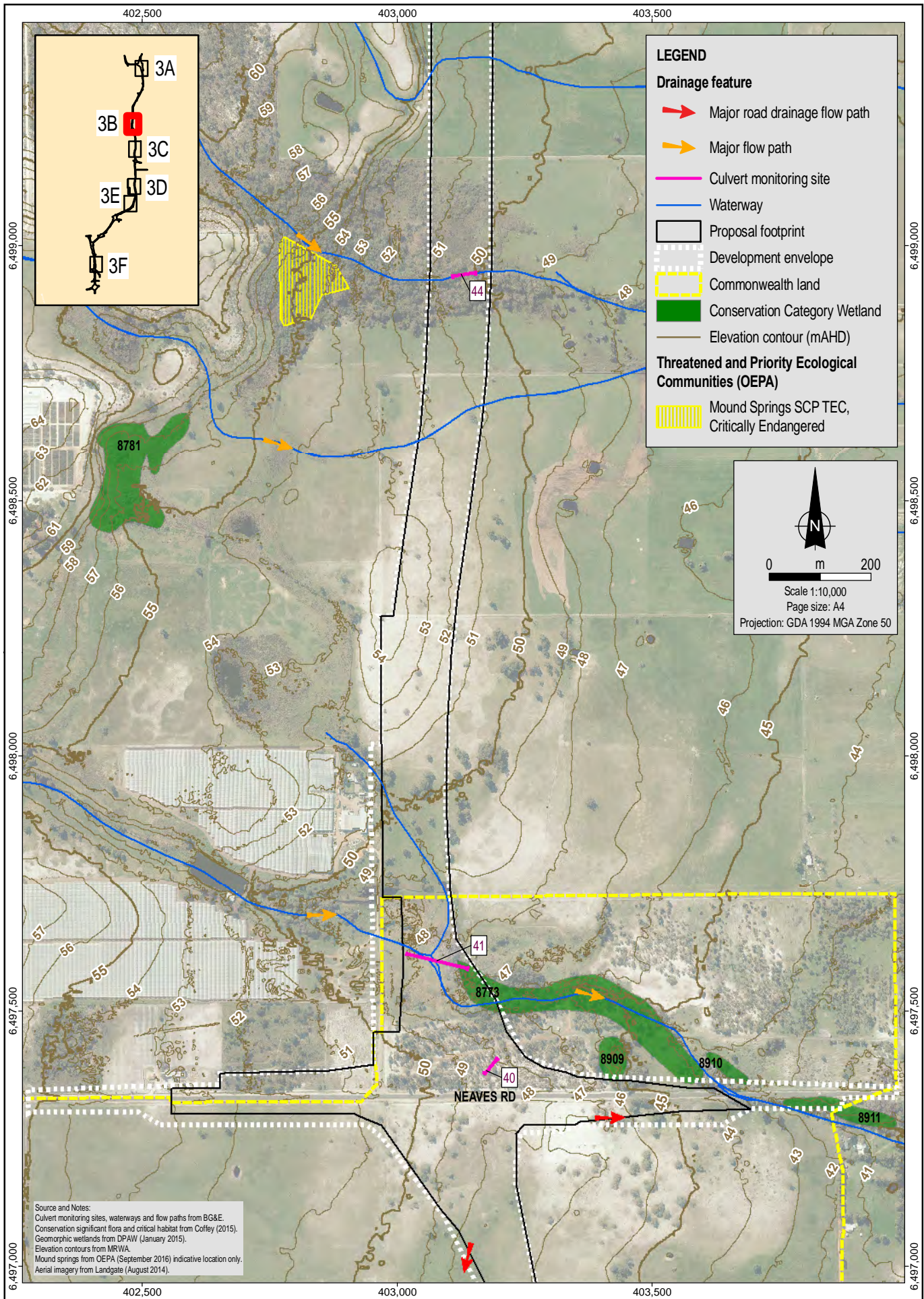


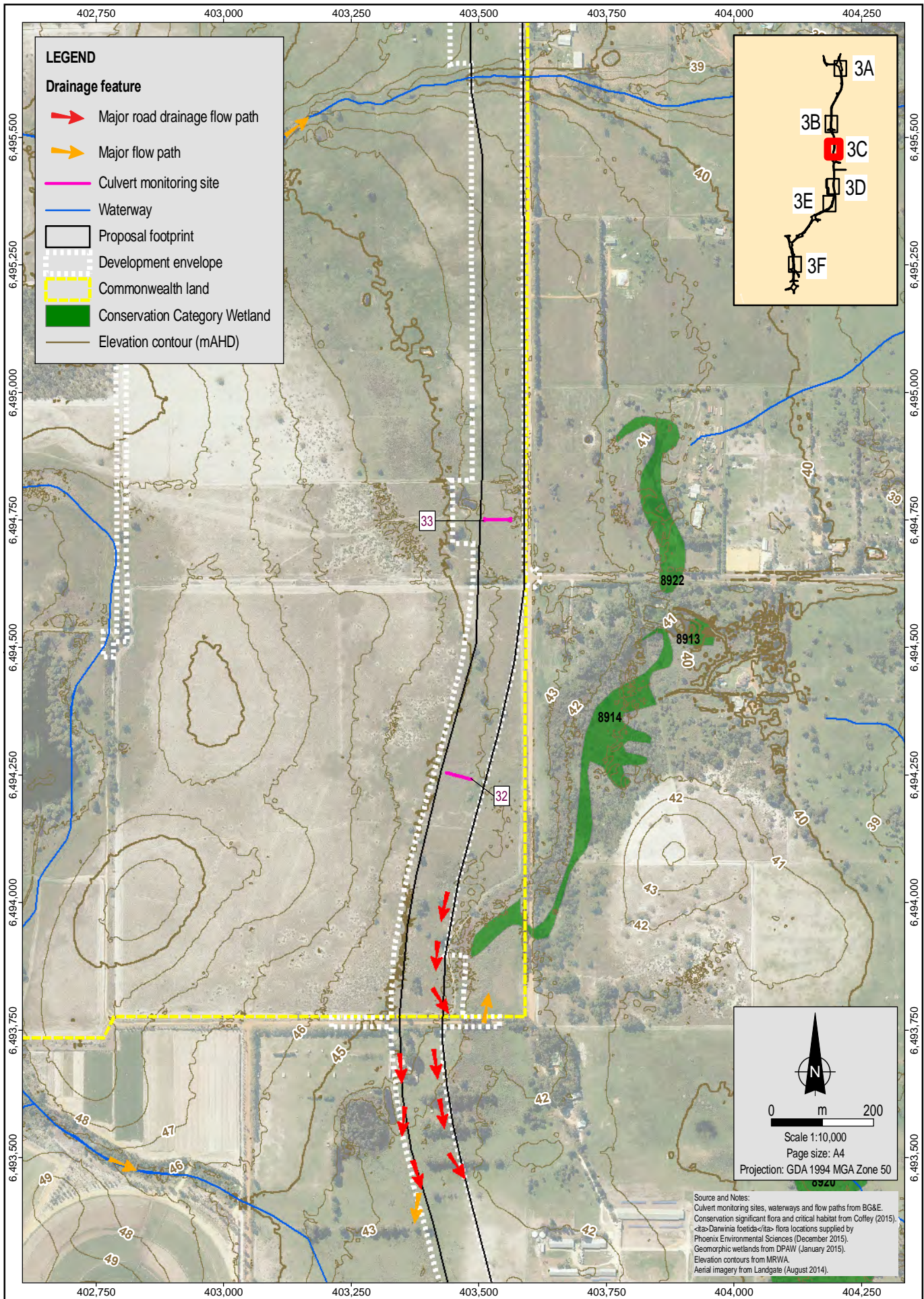
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 Bush Forever sites from DOP (January 2015).
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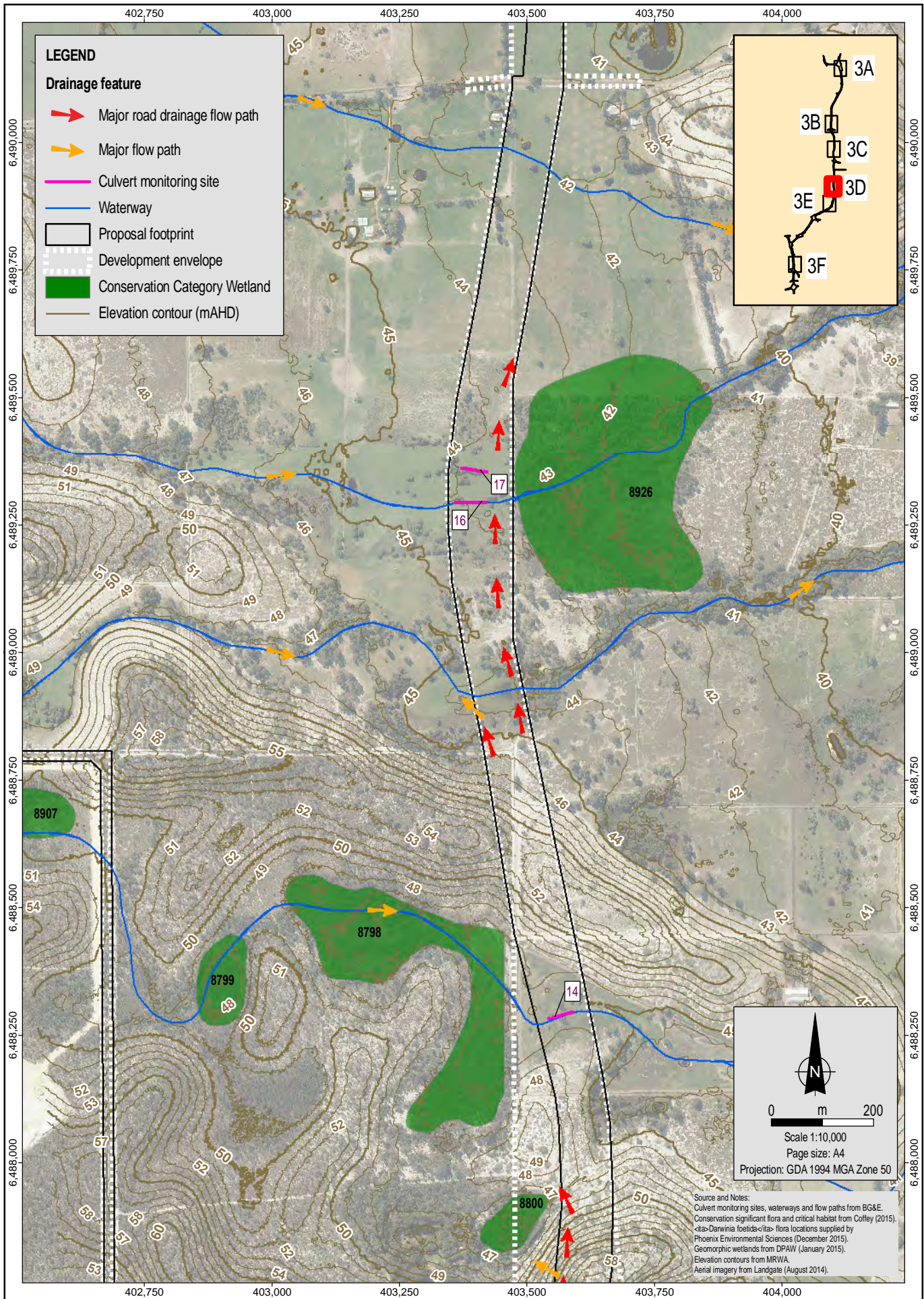


Source and Notes:
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 Public Drinking Water Source Areas and Wellhead Protection Zones from DOW (January 2015).
 Watercourses from GEODATA250k.
 Geomorphological landforms modified from Davidson, 1995.
 Aerial imagery from ArcGIS Online.









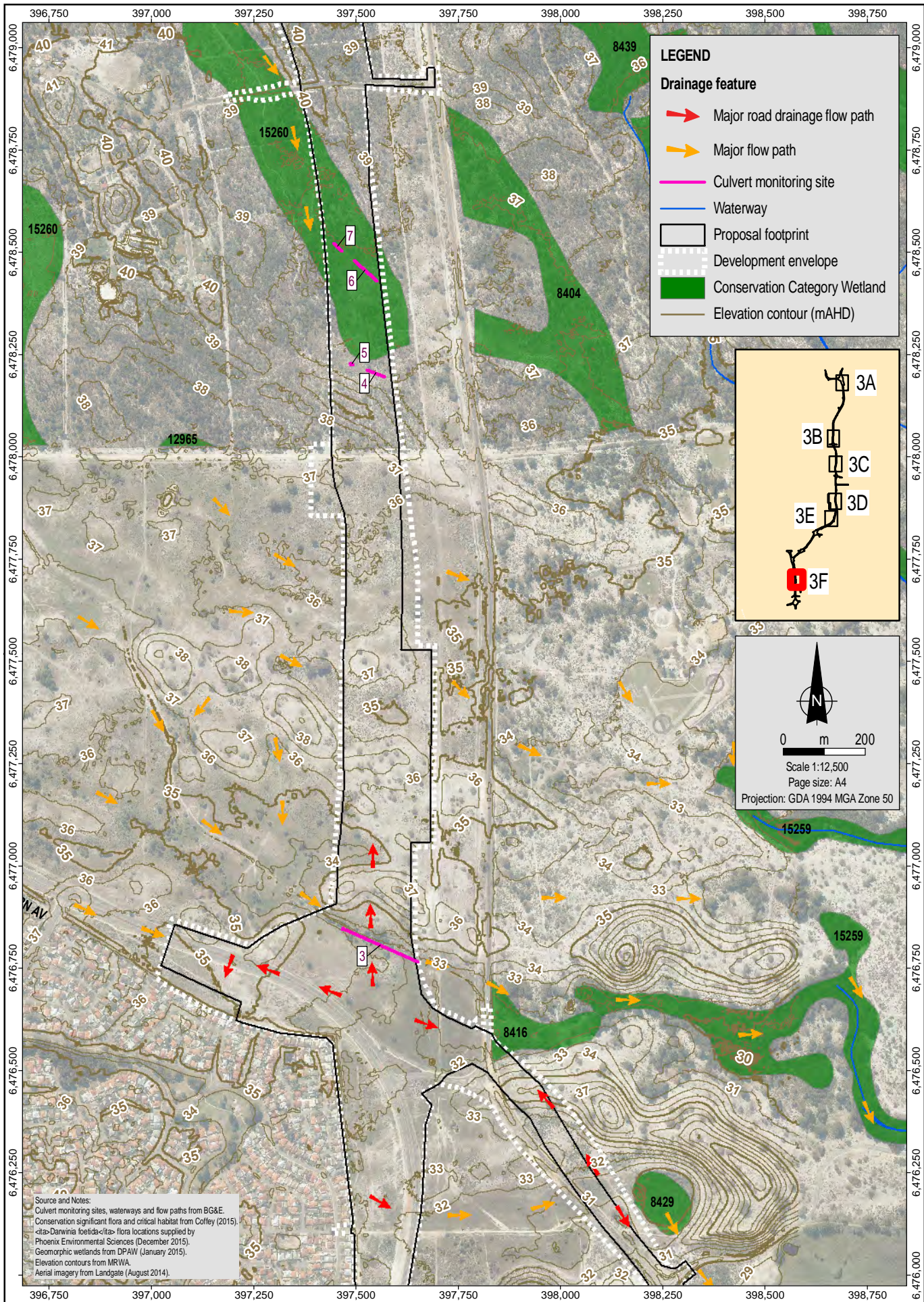
LEGEND

Drainage feature

- ➔ Major road drainage flow path
- ➔ Major flow path
- Culvert monitoring site
- Waterway
- Proposal footprint
- Development envelope
- Conservation Category Wetland
- Elevation contour (mAH)

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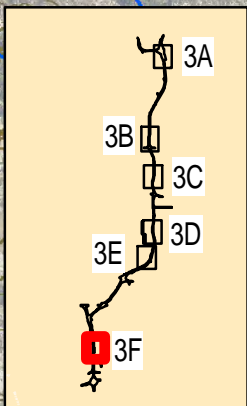
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 <i>Darwinia foetida</i> flora locations supplied by Phoenix Environmental Sciences (December 2015).
 Geomorphic wetlands from DPAW (January 2015).
 Elevation contours from MRWA.
 Aerial imagery from Landgate (August 2014).



LEGEND

Drainage feature

- ➔ Major road drainage flow path
- ➔ Major flow path
- Culvert monitoring site
- Waterway
- Proposal footprint
- Development envelope
- Conservation Category Wetland
- Elevation contour (mAHD)

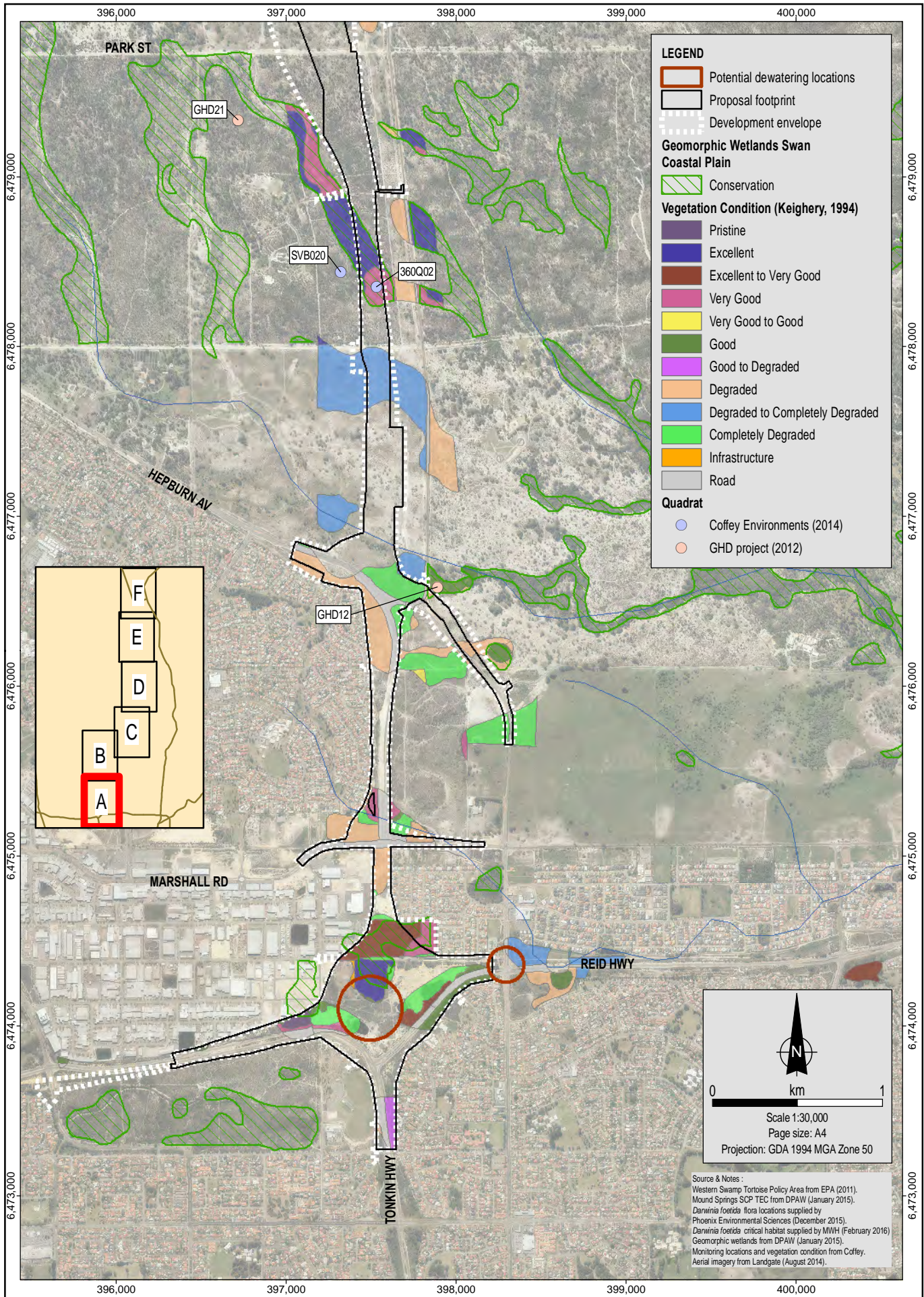


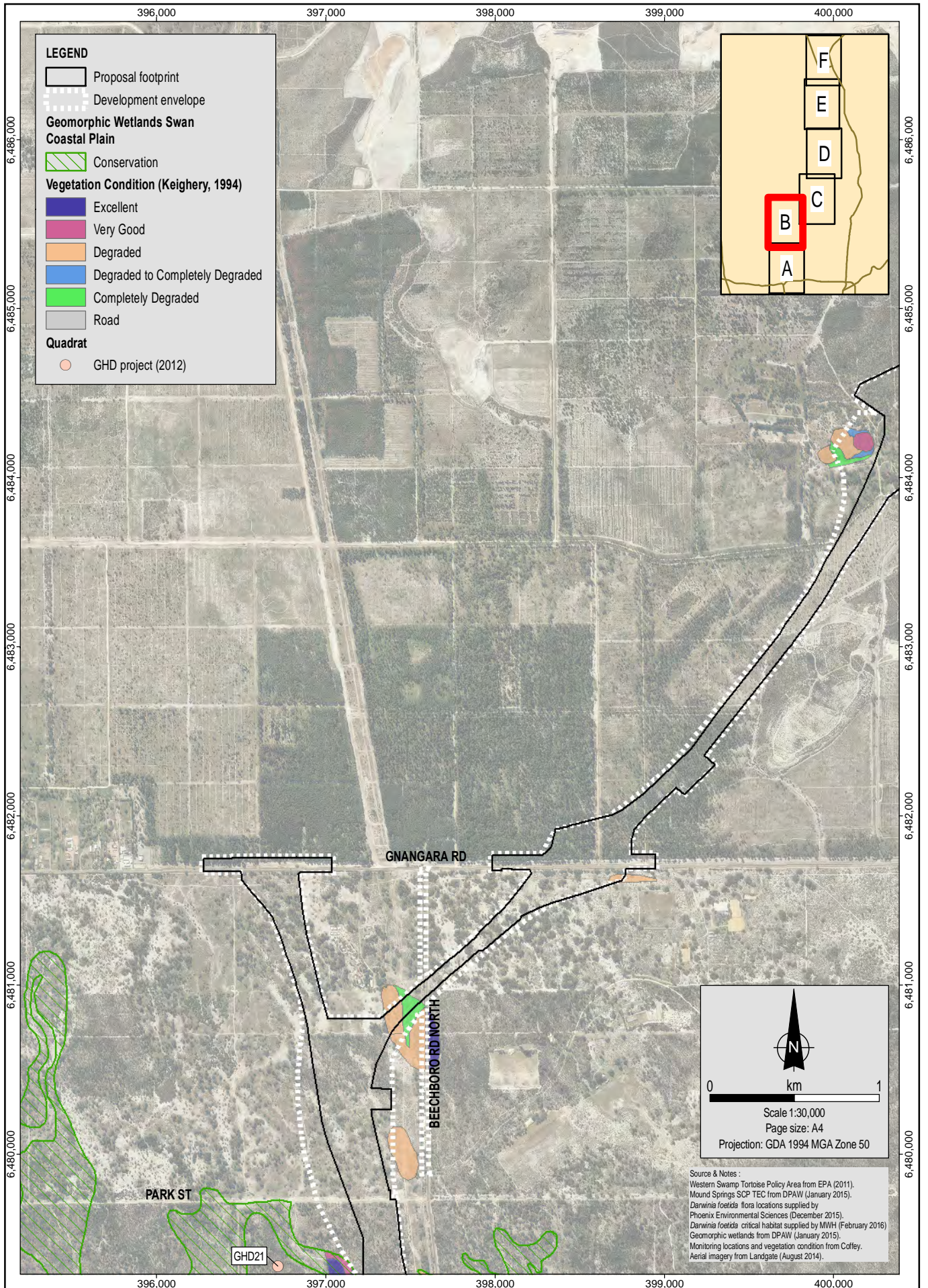
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Source and Notes:
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 <i>Dawsonia foetida</i> flora locations supplied by Phoenix Environmental Sciences (December 2015).
 Geomorphic wetlands from DPAW (January 2015).
 Elevation contours from MRWA.
 Aerial imagery from Landgate (August 2014).





LEGEND

- Proposal footprint
- Development envelope

Geomorphic Wetlands Swan Coastal Plain

- Conservation

Vegetation Condition (Keighery, 1994)

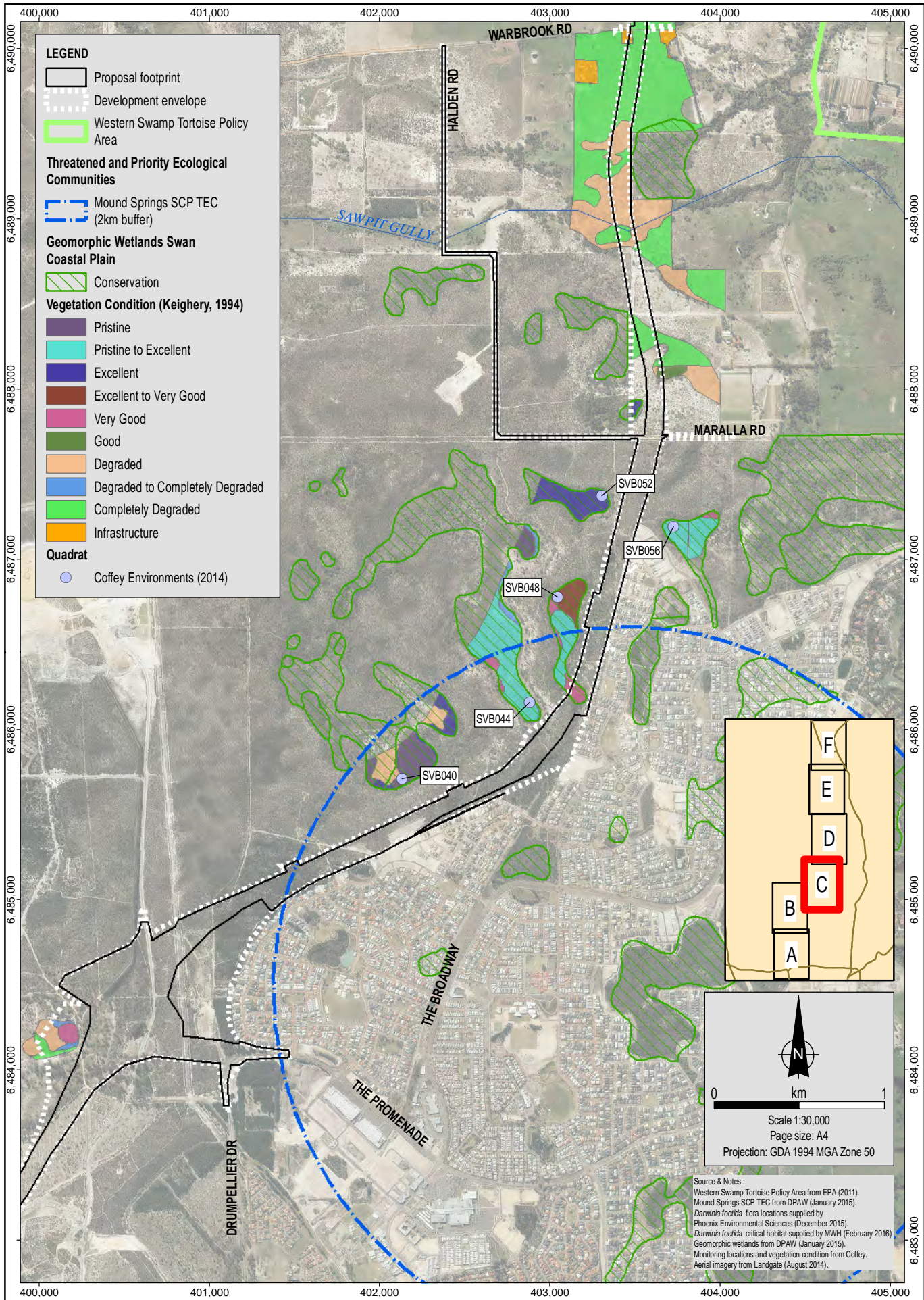
- Excellent
- Very Good
- Degraded
- Degraded to Completely Degraded
- Completely Degraded
- Road

Quadrat

- GHD project (2012)

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Source & Notes :
 Western Swamp Tortoise Policy Area from EPA (2011).
 Mound Springs SCP TEC from DPAW (January 2015).
 Darwinia foetida flora locations supplied by Phoenix Environmental Sciences (December 2015).
 Darwinia foetida critical habitat supplied by MWH (February 2016).
 Geomorphic wetlands from DPAW (January 2015).
 Monitoring locations and vegetation condition from Coffey.
 Aerial imagery from Landgate (August 2014).



LEGEND

- Proposal footprint
- Development envelope
- Western Swamp Tortoise Policy Area

Threatened and Priority Ecological Communities

- Mound Springs SCP TEC (2km buffer)

Geomorphic Wetlands Swan Coastal Plain

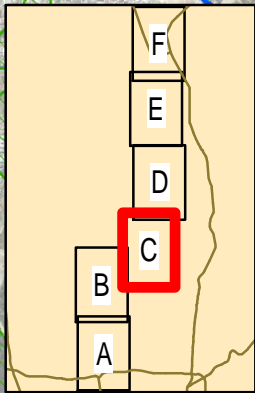
- Conservation

Vegetation Condition (Keighery, 1994)

- Pristine
- Pristine to Excellent
- Excellent
- Excellent to Very Good
- Very Good
- Good
- Degraded
- Degraded to Completely Degraded
- Completely Degraded
- Infrastructure

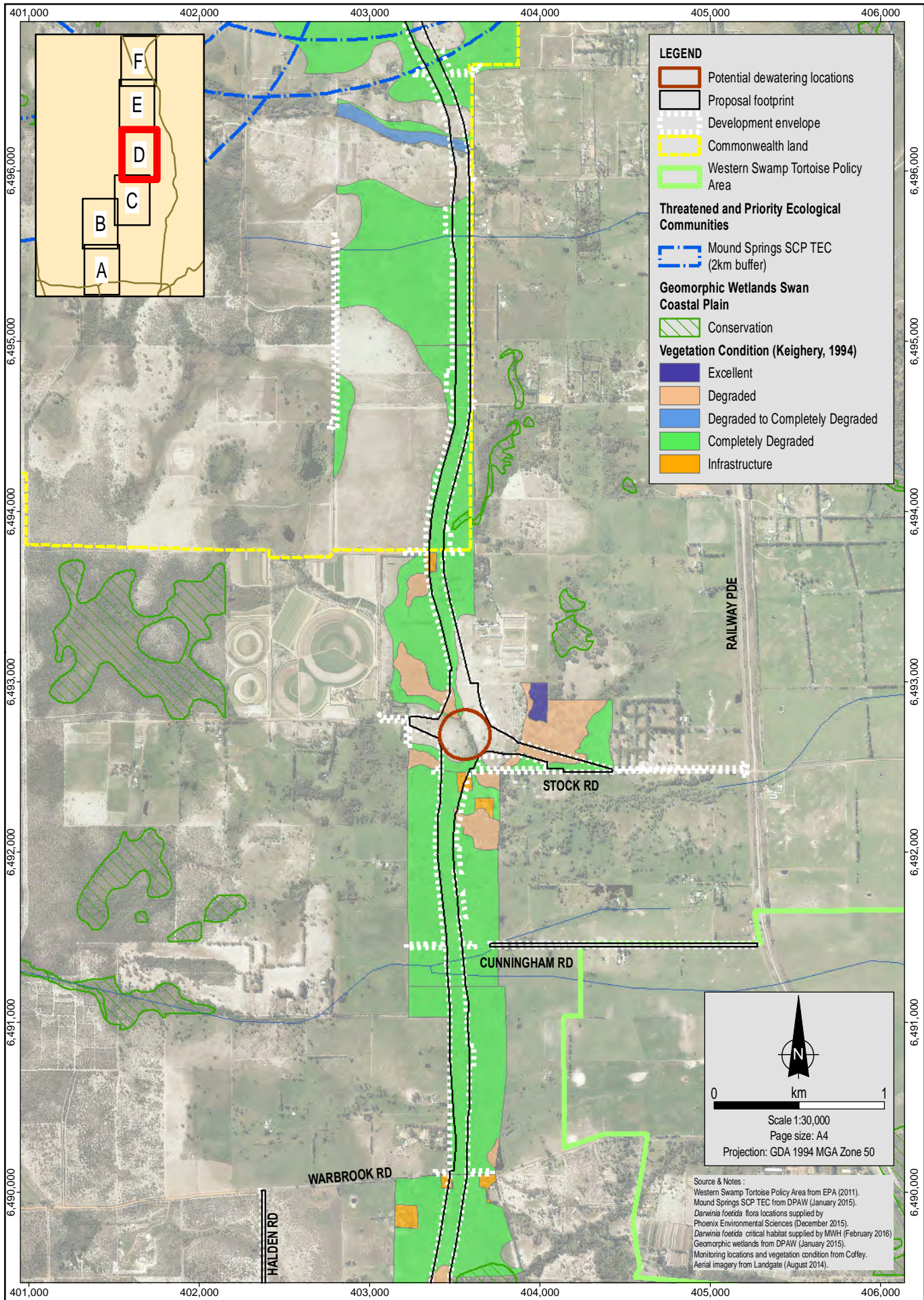
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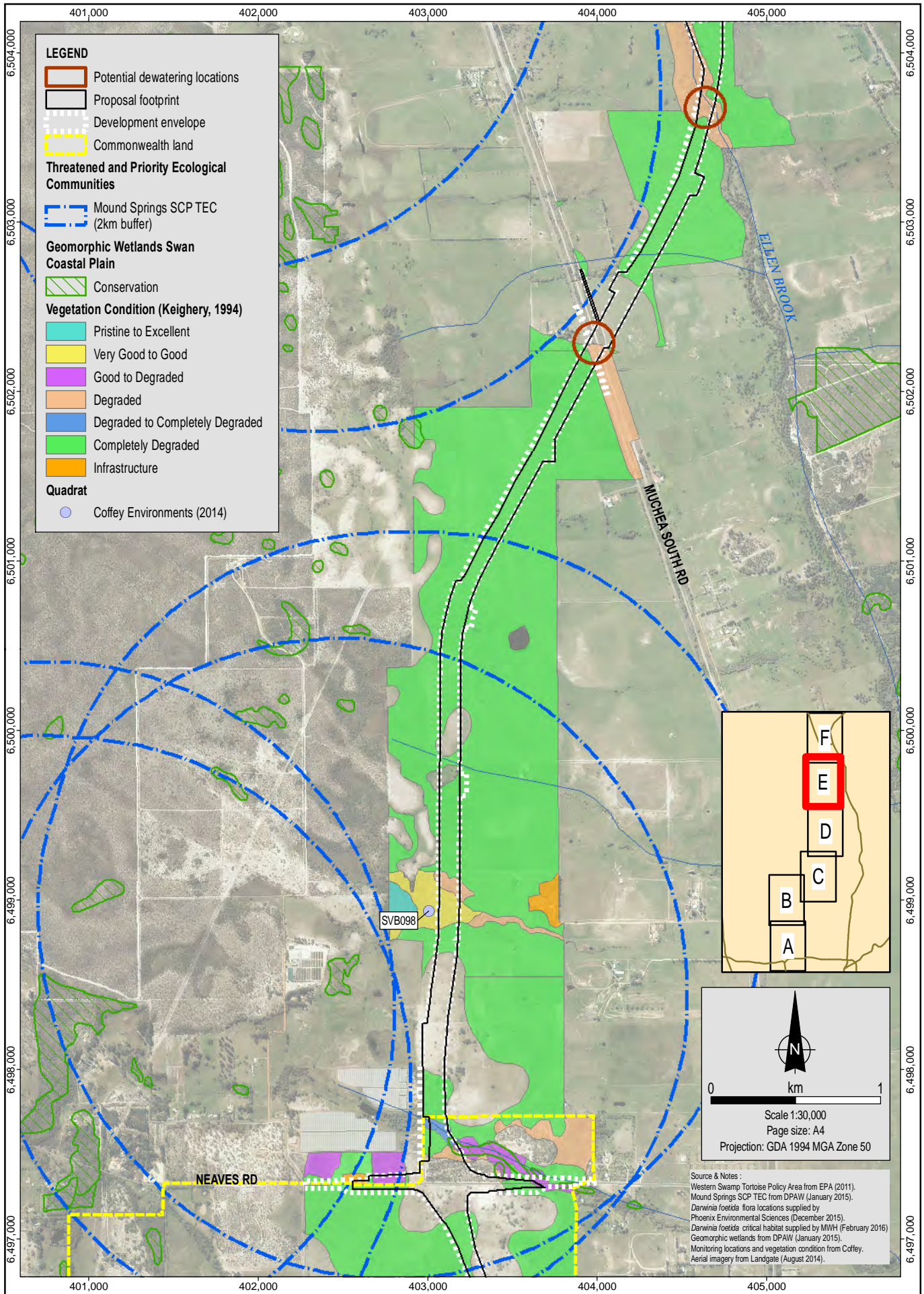
- Coffey Environments (2014)

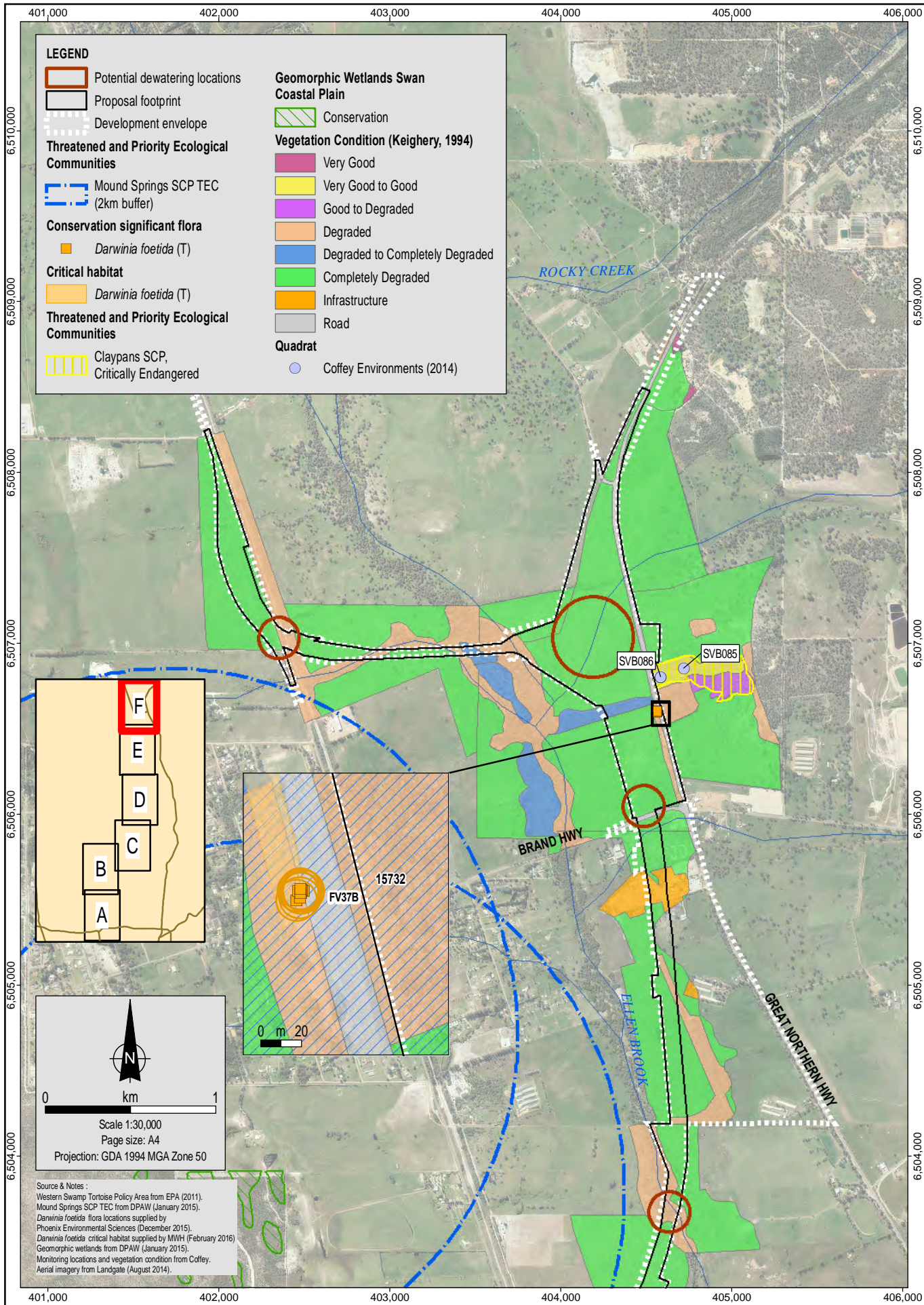


0 km 1
 Scale 1:30,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source & Notes :
 Western Swamp Tortoise Policy Area from EPA (2011).
 Mound Springs SCP TEC from DPAW (January 2015).
Darwinia foetida flora locations supplied by Phoenix Environmental Sciences (December 2015).
Darwinia foetida critical habitat supplied by MWH (February 2016).
 Geomorphic wetlands from DPAW (January 2015).
 Monitoring locations and vegetation condition from Coffey.
 Aerial imagery from Landgate (August 2014).







LEGEND

- Potential dewatering locations
- Proposal footprint
- Development envelope

Threated and Priority Ecological Communities

- Mound Springs SCP TEC (2km buffer)

Conservation significant flora

- Darwinia foetida* (T)

Critical habitat

- Darwinia foetida* (T)

Threated and Priority Ecological Communities

- Claypans SCP, Critically Endangered

Geomorphic Wetlands Swan Coastal Plain

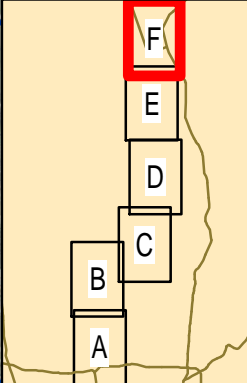
- Conservation

Vegetation Condition (Keighery, 1994)

- Very Good
- Very Good to Good
- Good to Degraded
- Degraded
- Degraded to Completely Degraded
- Completely Degraded
- Infrastructure
- Road

Quadrat

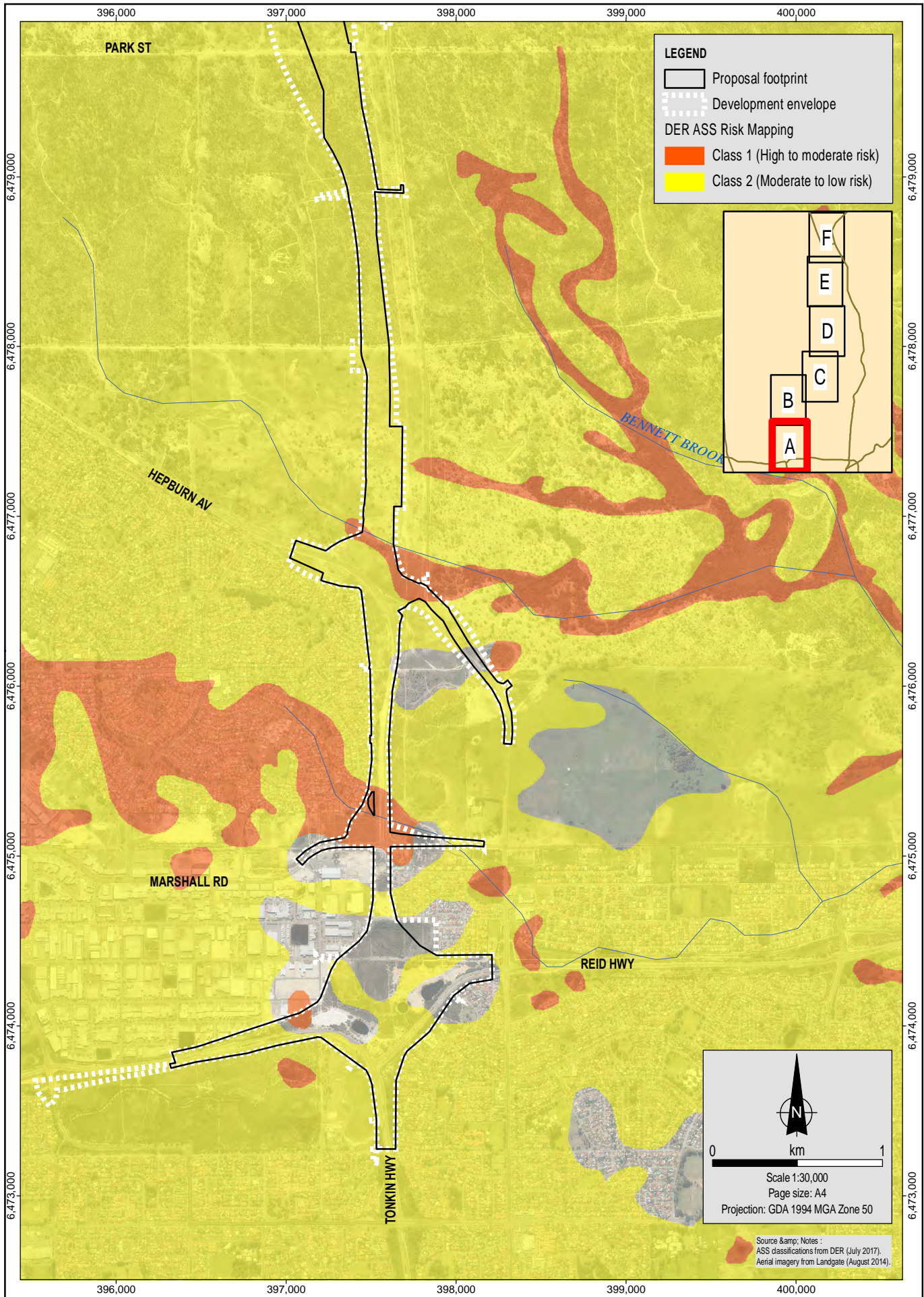
- Coffey Environments (2014)

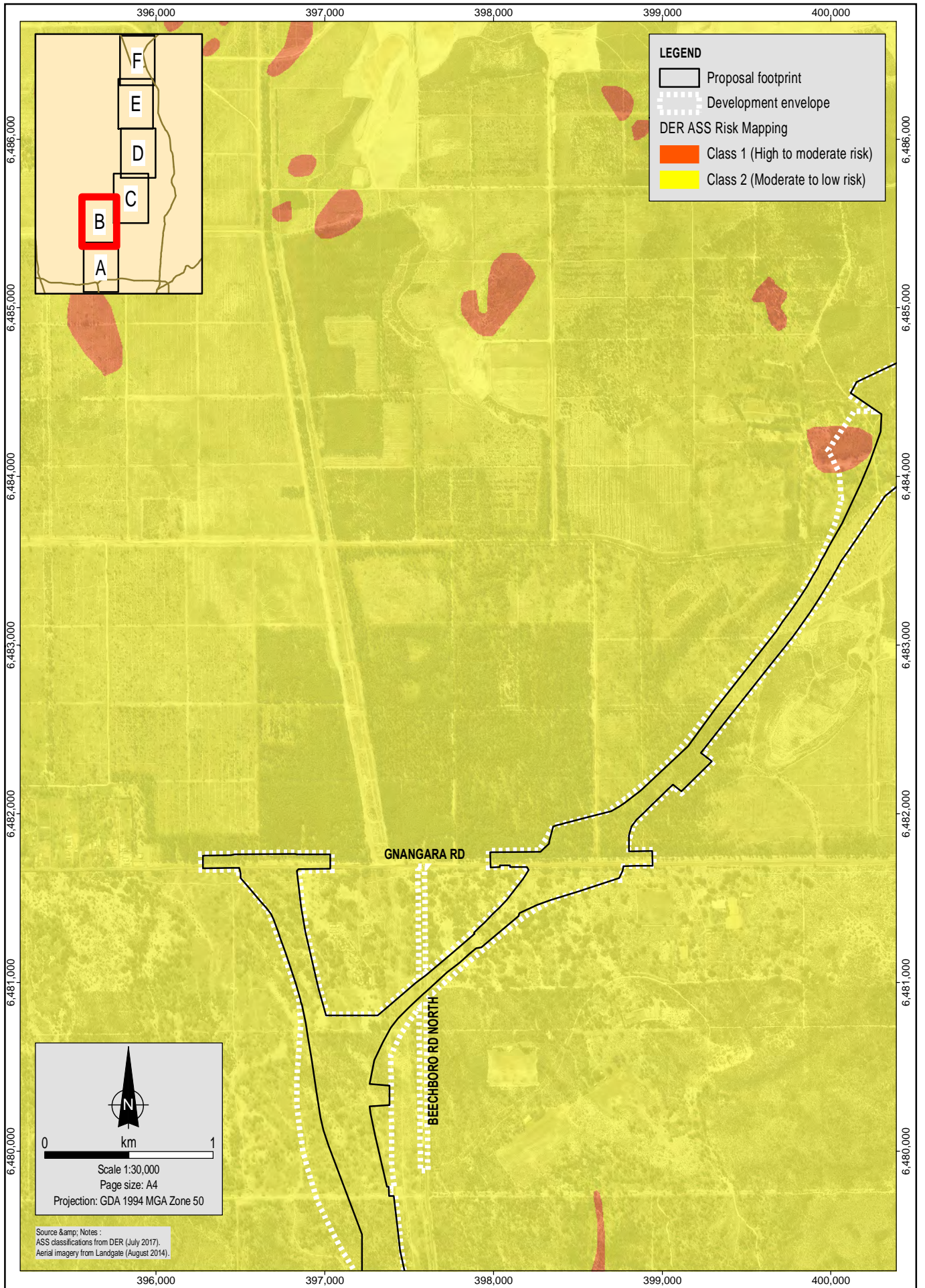


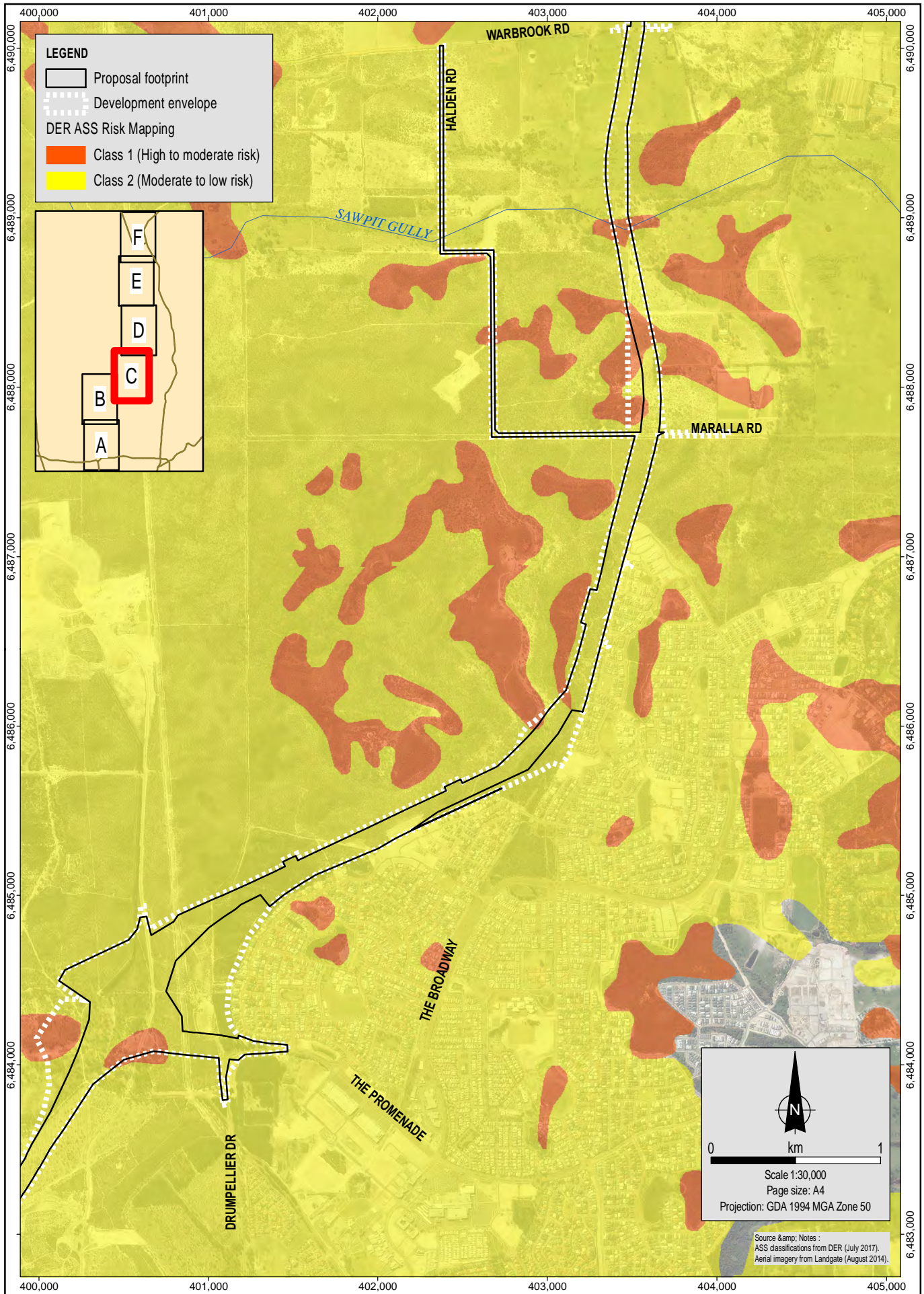
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Projection: GDA 1994 MGA Zone 50

Source & Notes :
 Western Swamp Tortoise Policy Area from EPA (2011).
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LEGEND

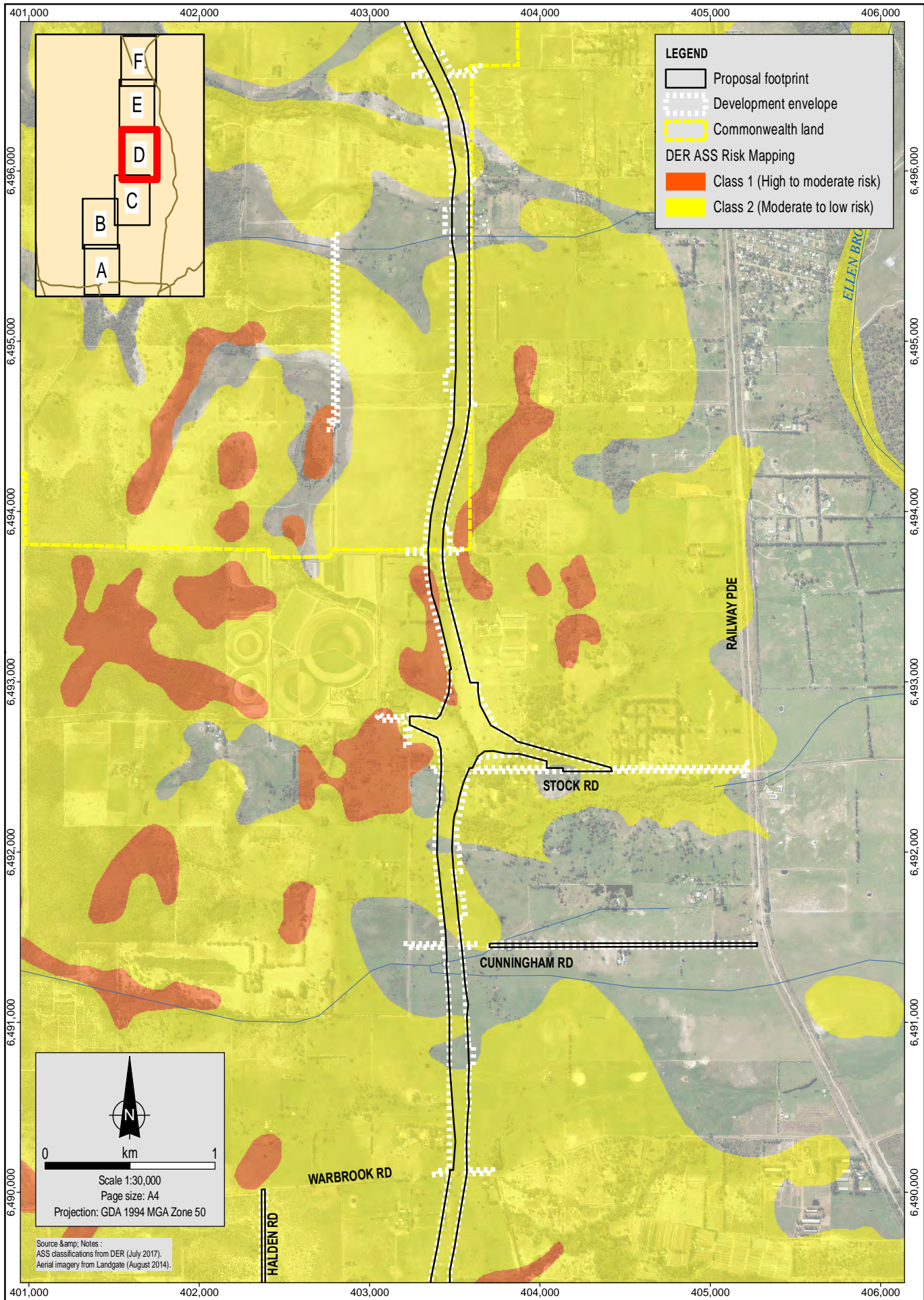
- Proposal footprint
- Development envelope

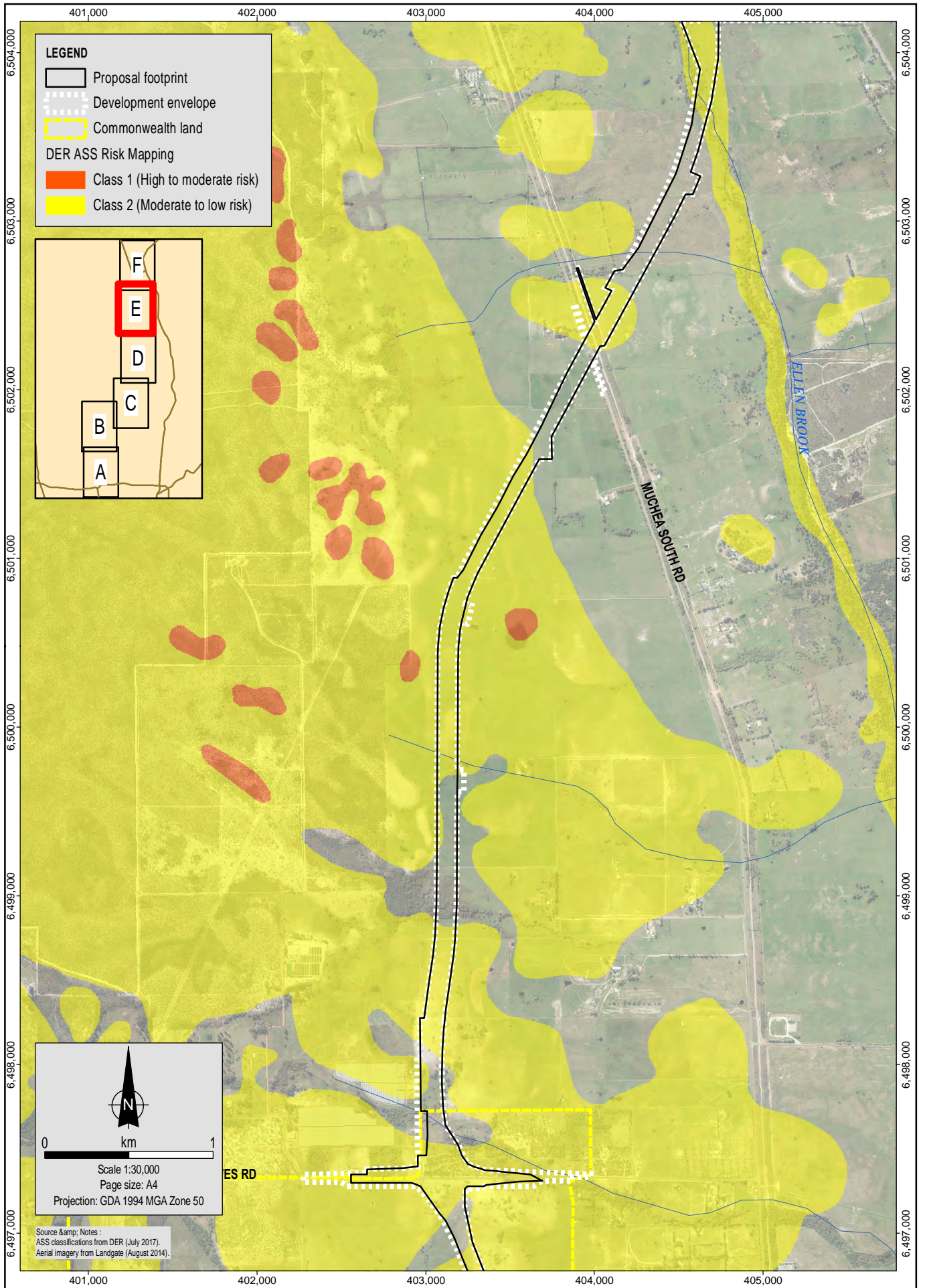
DER ASS Risk Mapping

- Class 1 (High to moderate risk)
- Class 2 (Moderate to low risk)

0 km 1
 Scale 1:30,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source & Notes :
 ASS classifications from DER (July 2017).
 Aerial imagery from Landgate (August 2014).



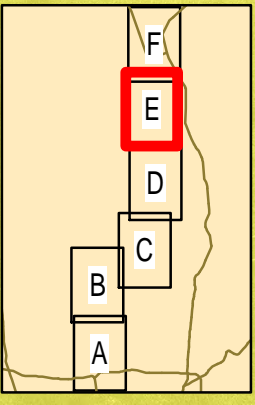


LEGEND

- Proposal footprint
- Development envelope
- Commonwealth land

DER ASS Risk Mapping

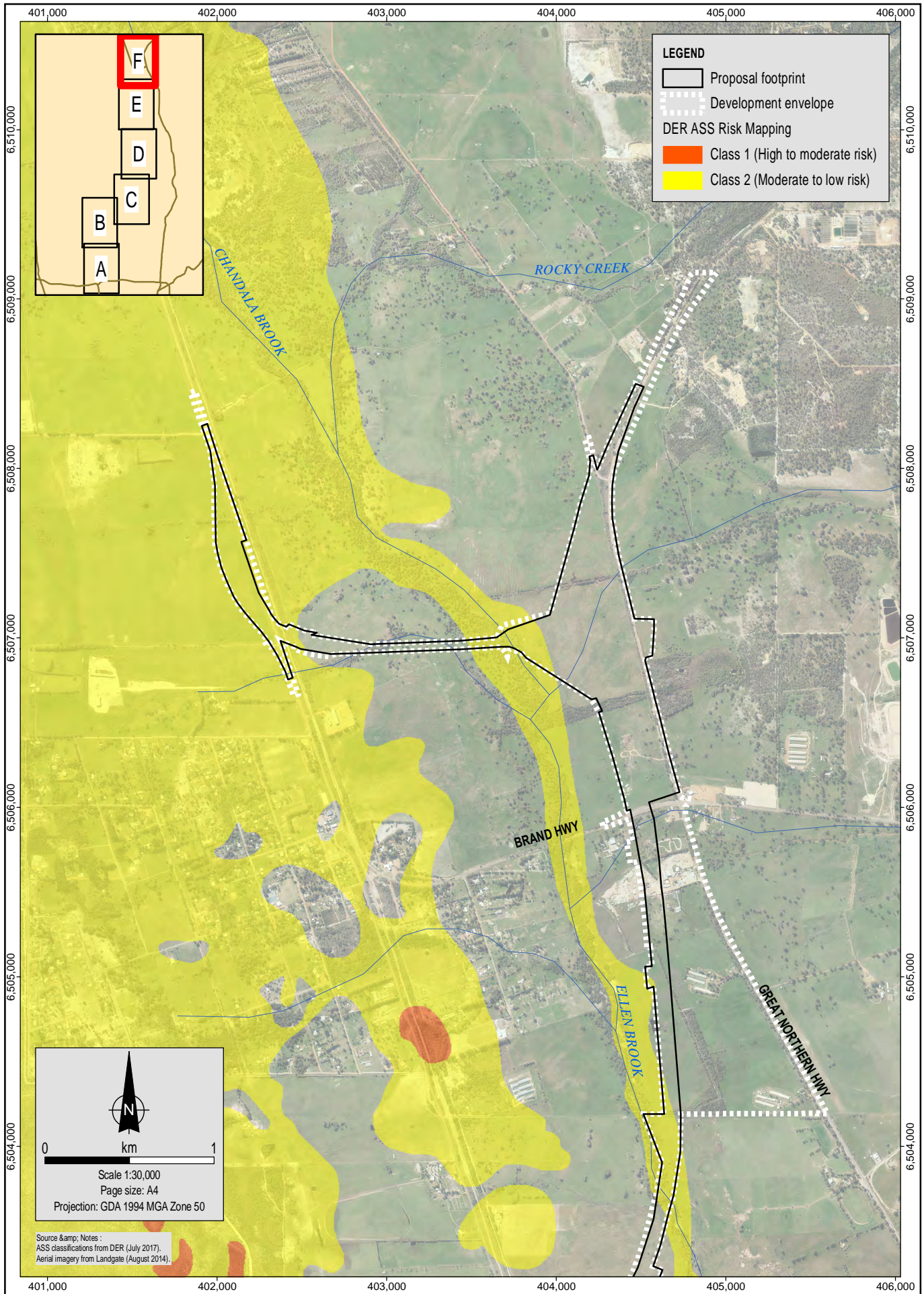
- Class 1 (High to moderate risk)
- Class 2 (Moderate to low risk)

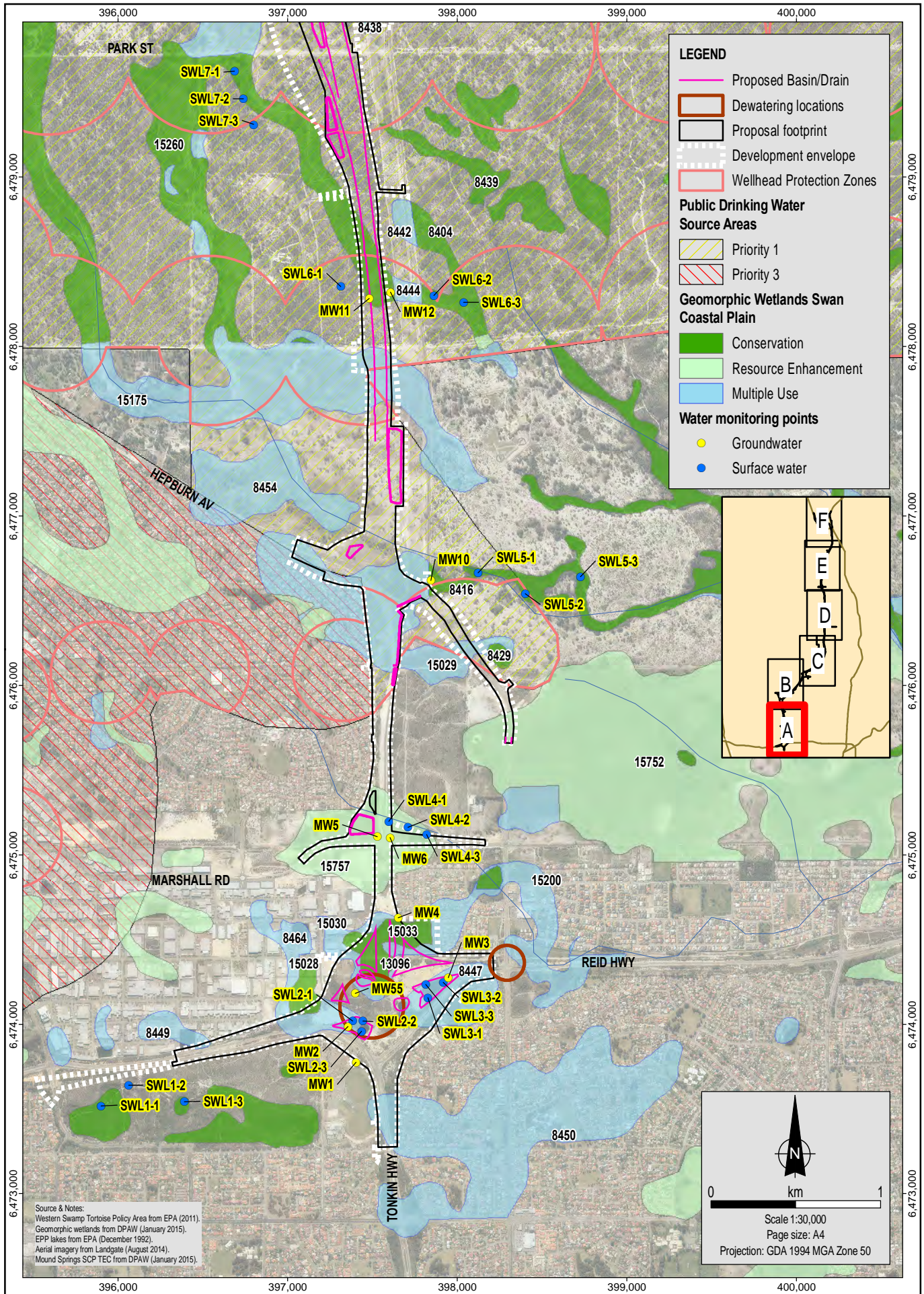


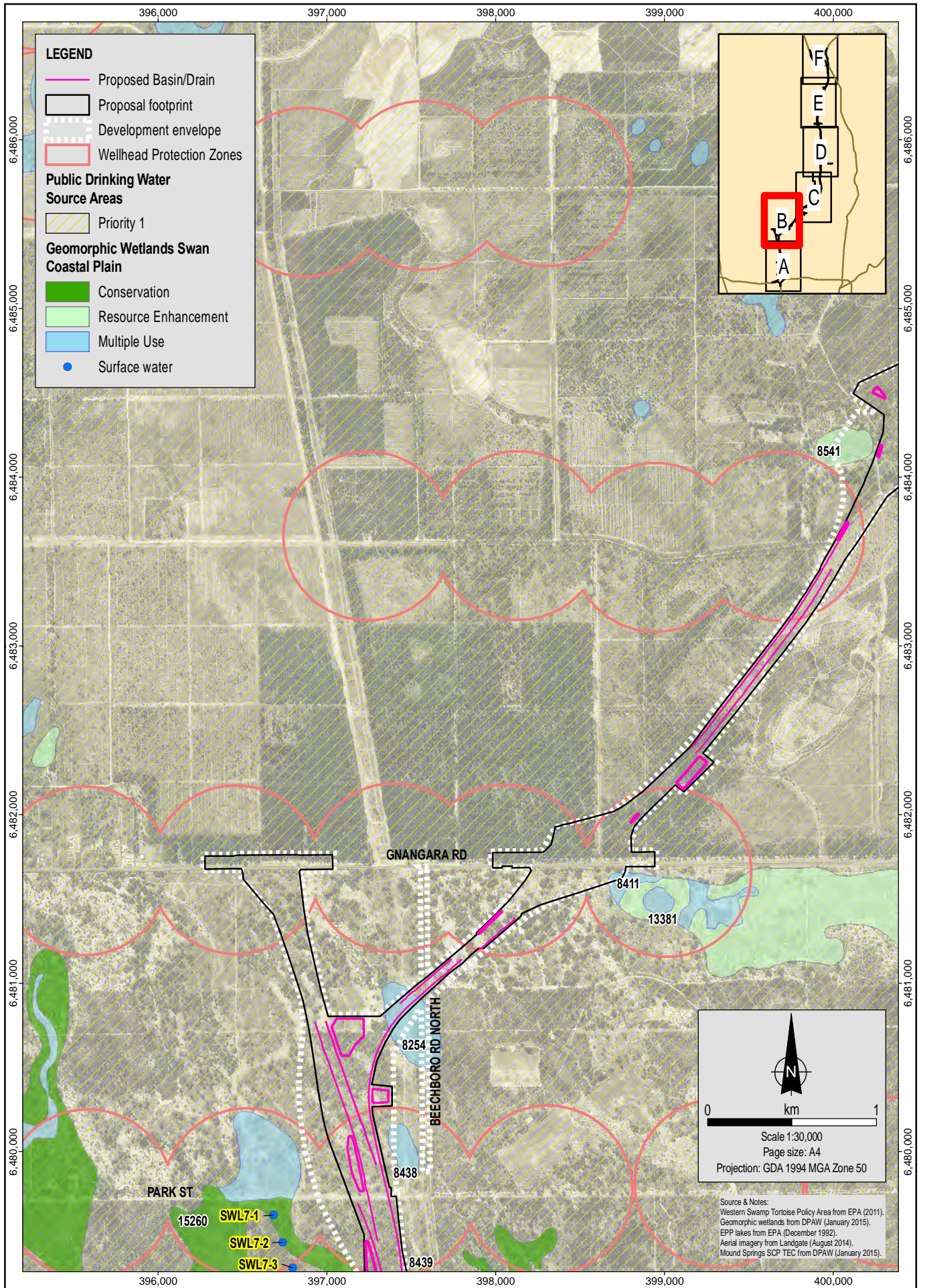
0 km 1

Scale 1:30,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source & Notes :
 ASS classifications from DER (July 2017).
 Aerial imagery from Landgate (August 2014).

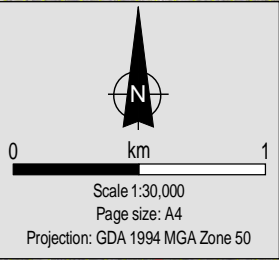
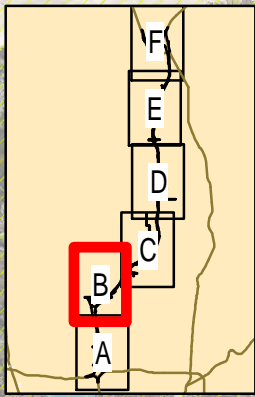




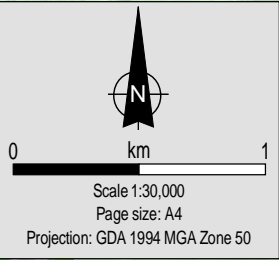
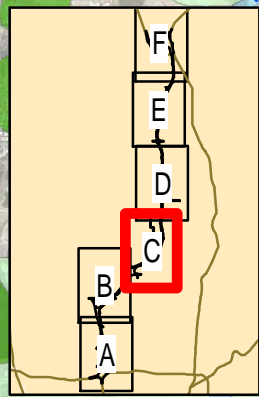
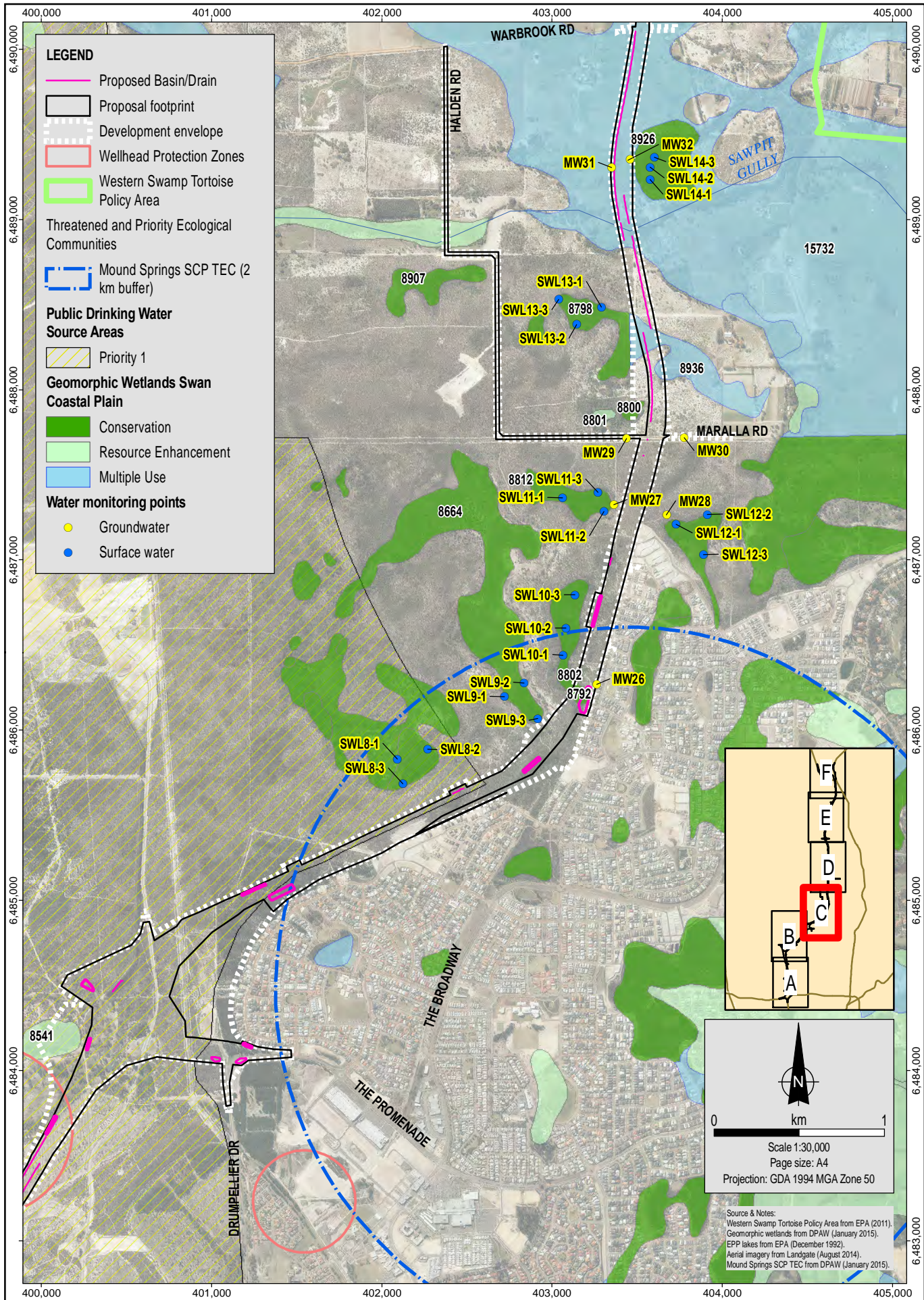


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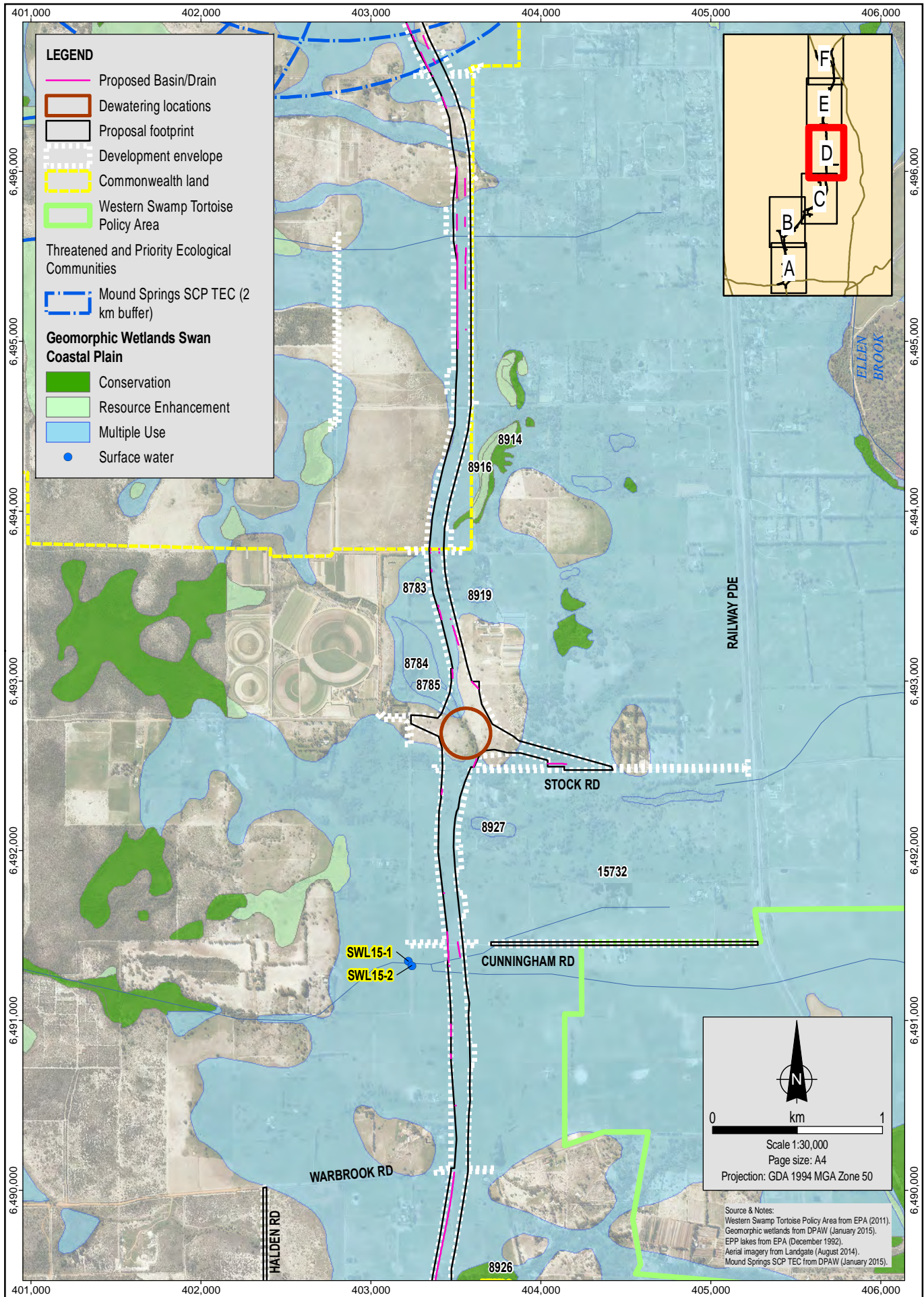
- Proposed Basin/Drain
 - Proposal footprint
 - Development envelope
 - Wellhead Protection Zones
- Public Drinking Water Source Areas**
- Priority 1
- Geomorphic Wetlands Swan Coastal Plain**
- Conservation
 - Resource Enhancement
 - Multiple Use
 - Surface water

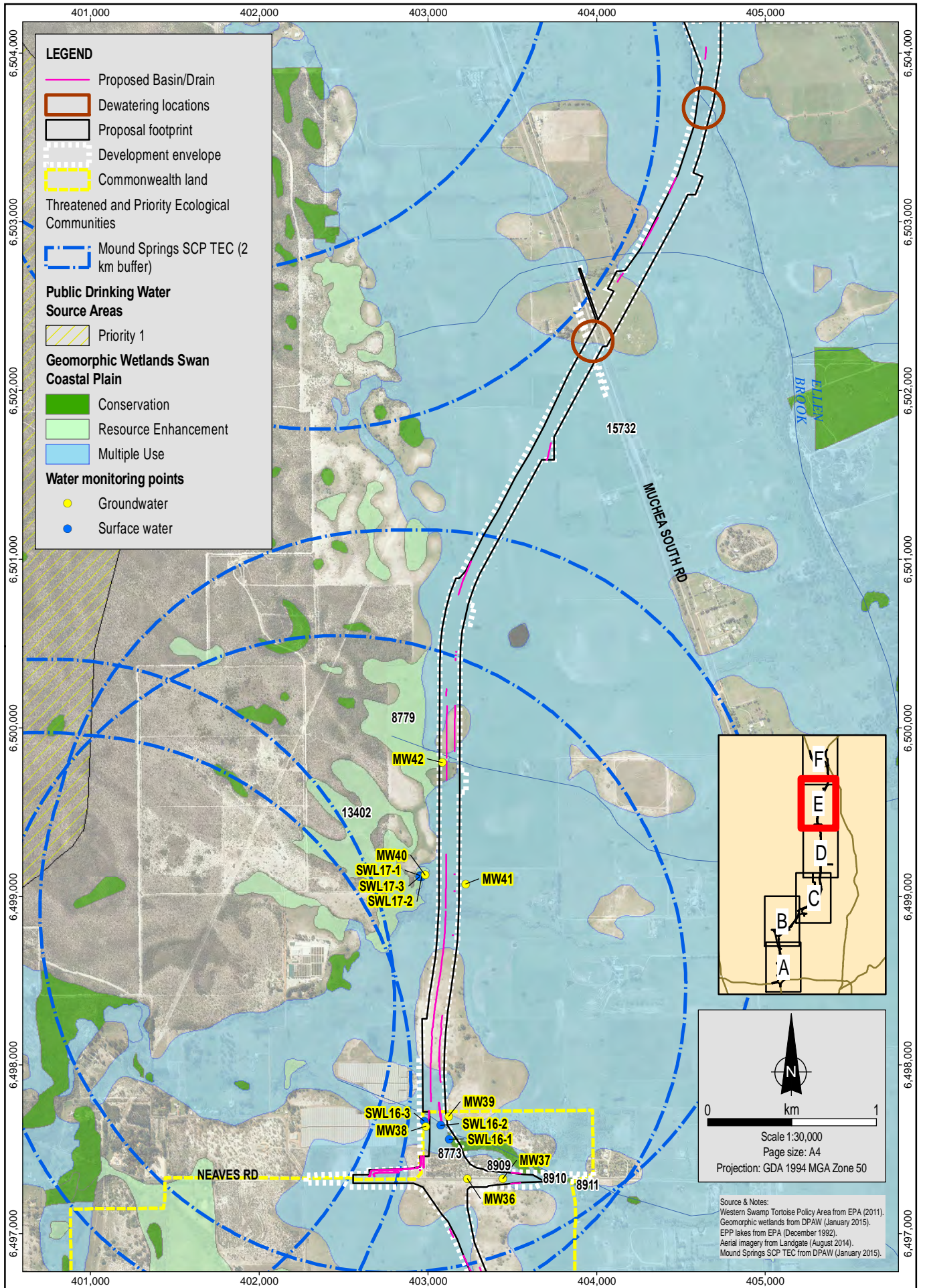


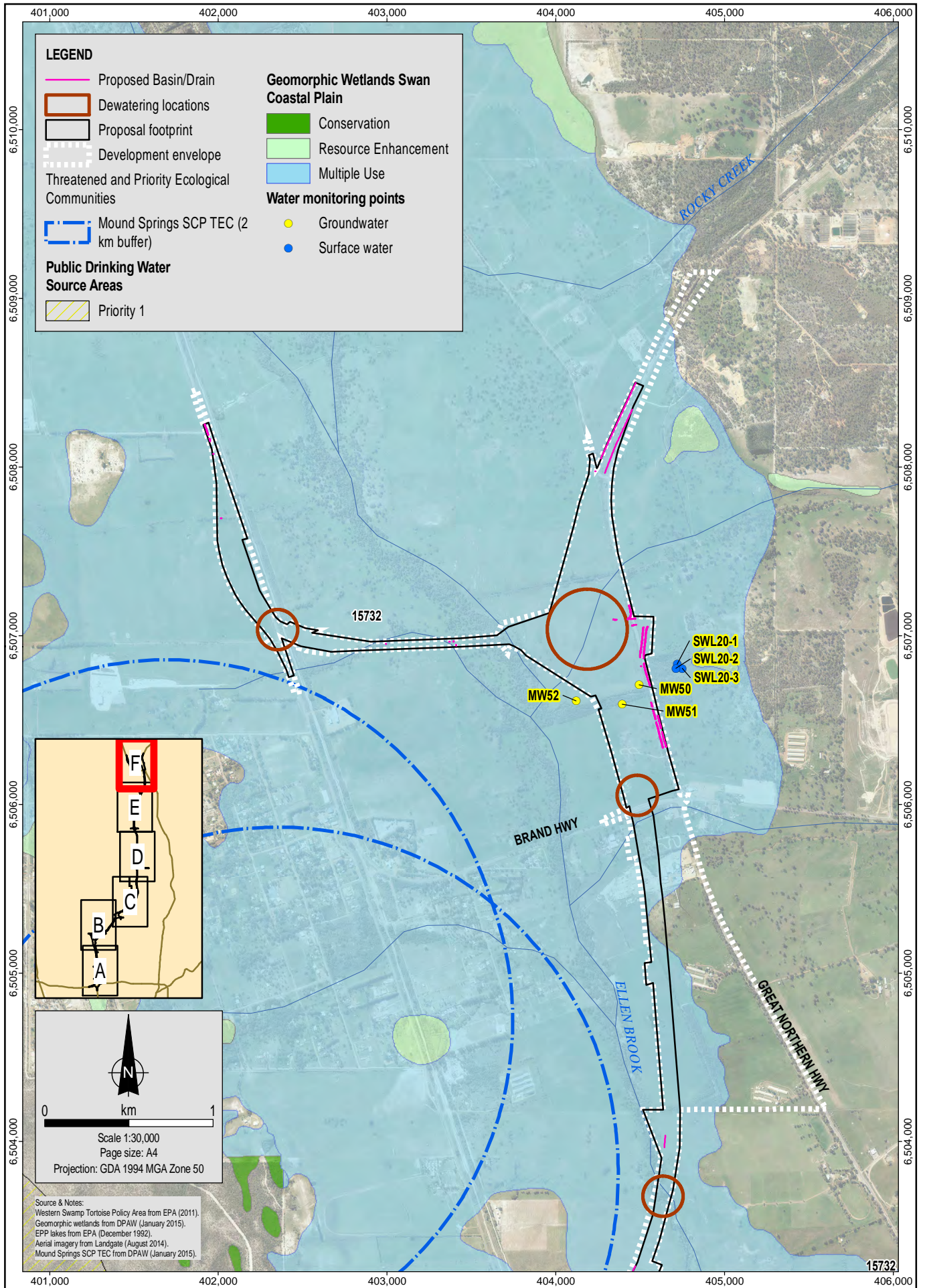
Source & Notes:
 Western Swamp Tortoise Policy Area from EPA (2011).
 Geomorphic wetlands from DPAW (January 2015).
 EPP lakes from EPA (December 1992).
 Aerial imagery from Landgate (August 2014).
 Mound Springs SCP TEC from DPAW (January 2015).



Source & Notes:
Western Swamp Tortoise Policy Area from EPA (2011).
Geomorphic wetlands from DPAW (January 2015).
EPP lakes from EPA (December 1992).
Aerial imagery from Landgate (August 2014).
Mound Springs SCP TEC from DPAW (January 2015).







LEGEND

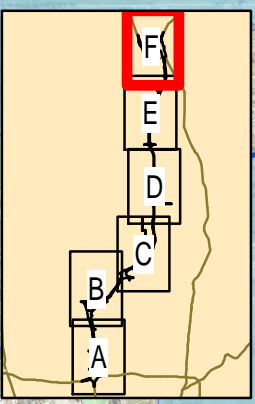
- Proposed Basin/Drain
- Dewatering locations
- Proposal footprint
- Development envelope
- Threatened and Priority Ecological Communities
- Mound Springs SCP TEC (2 km buffer)
- Public Drinking Water Source Areas
 - Priority 1

Geomorphic Wetlands Swan Coastal Plain

- Conservation
- Resource Enhancement
- Multiple Use

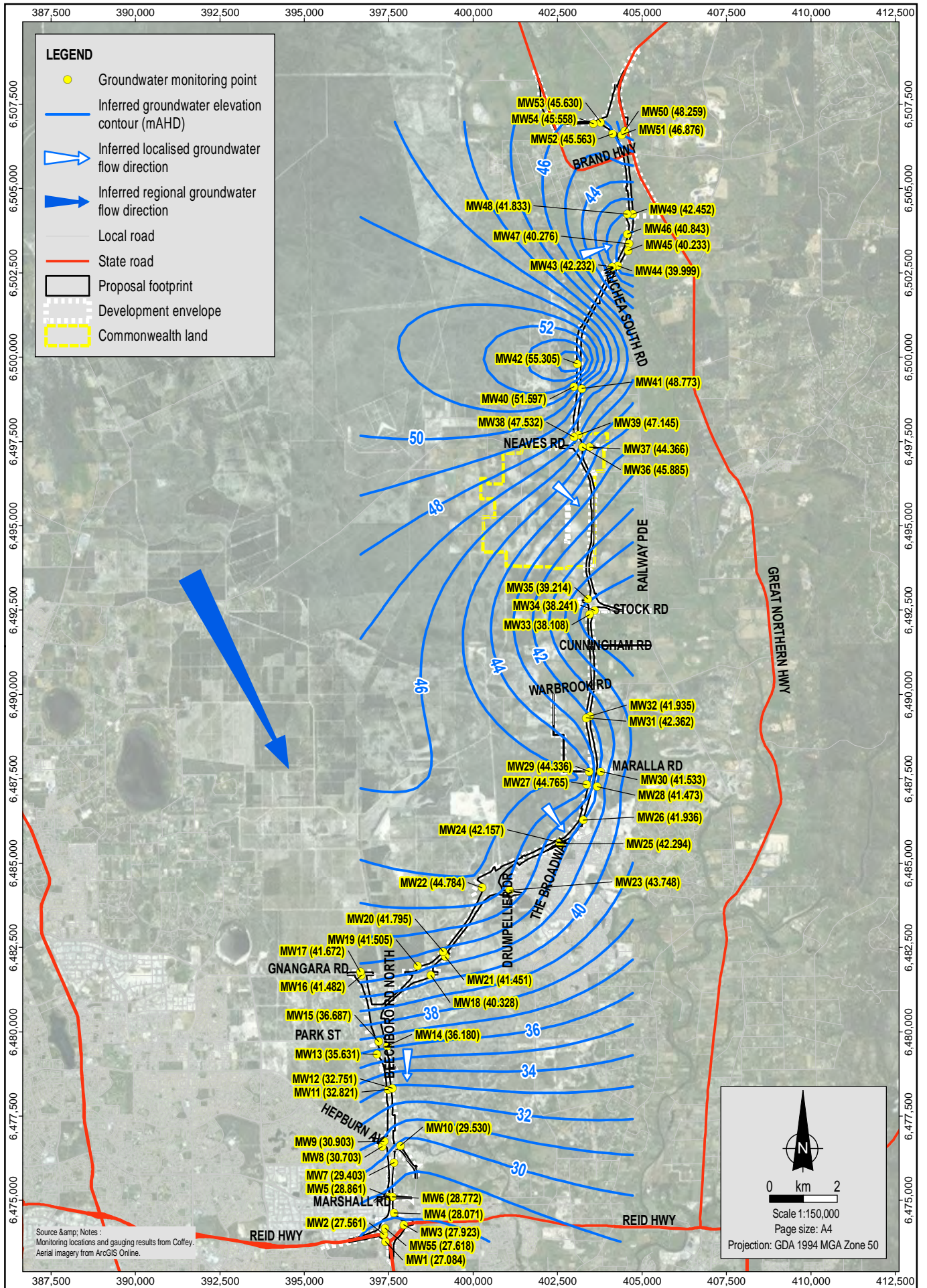
Water monitoring points

- Groundwater
- Surface water



Scale 1:30,000
Page size: A4
Projection: GDA 1994 MGA Zone 50

Source & Notes:
Western Swamp Tortoise Policy Area from EPA (2011).
Geomorphic wetlands from DPAW (January 2015).
EPP lakes from EPA (December 1992).
Aerial imagery from Landgate (August 2014).
Mound Springs SCP TEC from DPAW (January 2015).

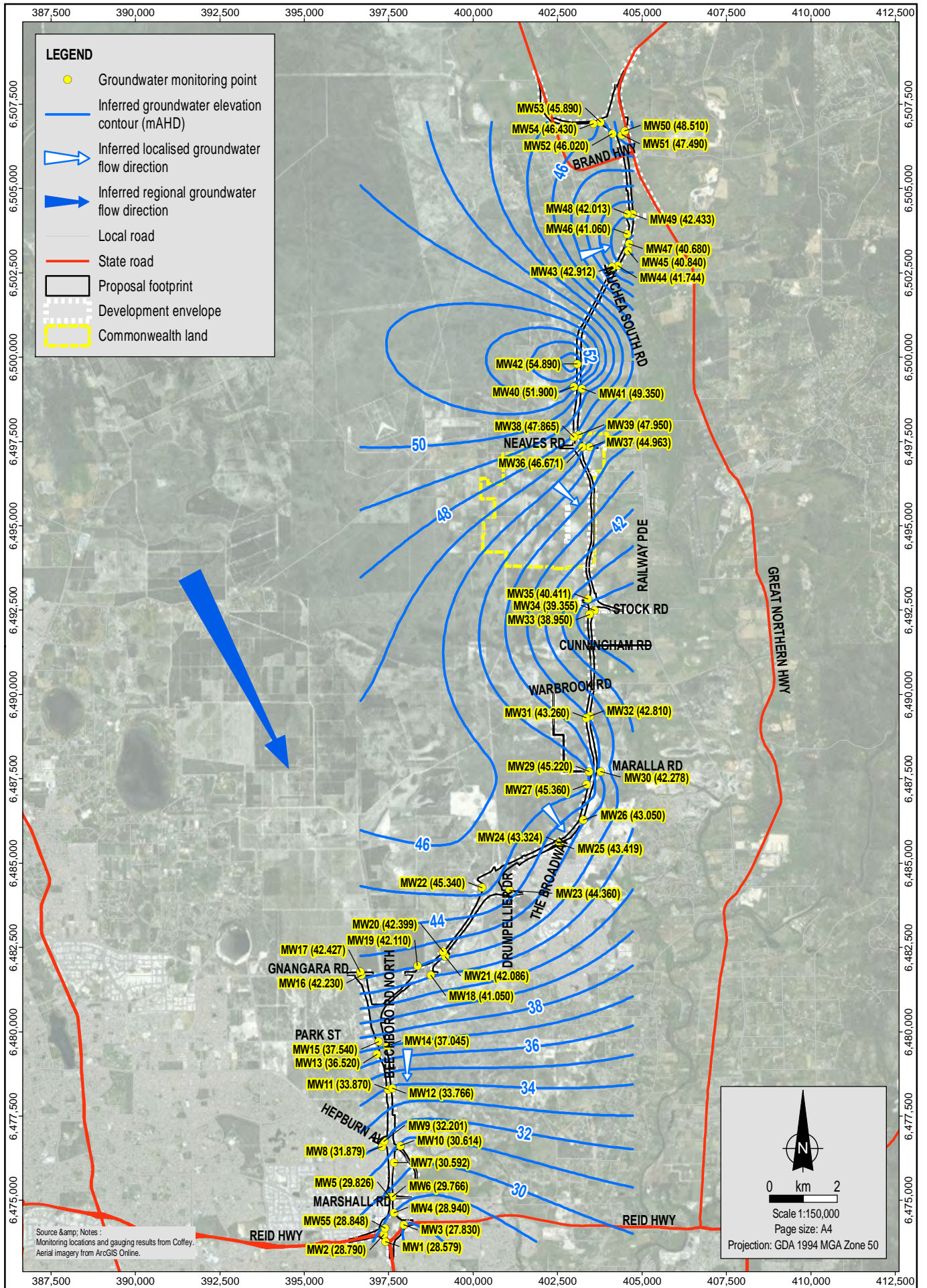


LEGEND

- Groundwater monitoring point
- Inferred groundwater elevation contour (mAHD)
- ▶ Inferred localised groundwater flow direction
- ▶ Inferred regional groundwater flow direction
- Local road
- State road
- ▭ Proposal footprint
- ▭ Development envelope
- ▭ Commonwealth land

0 km 2
 Scale 1:150,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source & Notes:
 Monitoring locations and gauging results from Coffey.
 Aerial imagery from ArcGIS Online.



LEGEND

- Groundwater monitoring point
- Inferred groundwater elevation contour (mAHD)
- ▶ Inferred localised groundwater flow direction
- ▶ Inferred regional groundwater flow direction
- Local road
- State road
- ▭ Proposal footprint
- ▭ Development envelope
- ▭ Commonwealth land

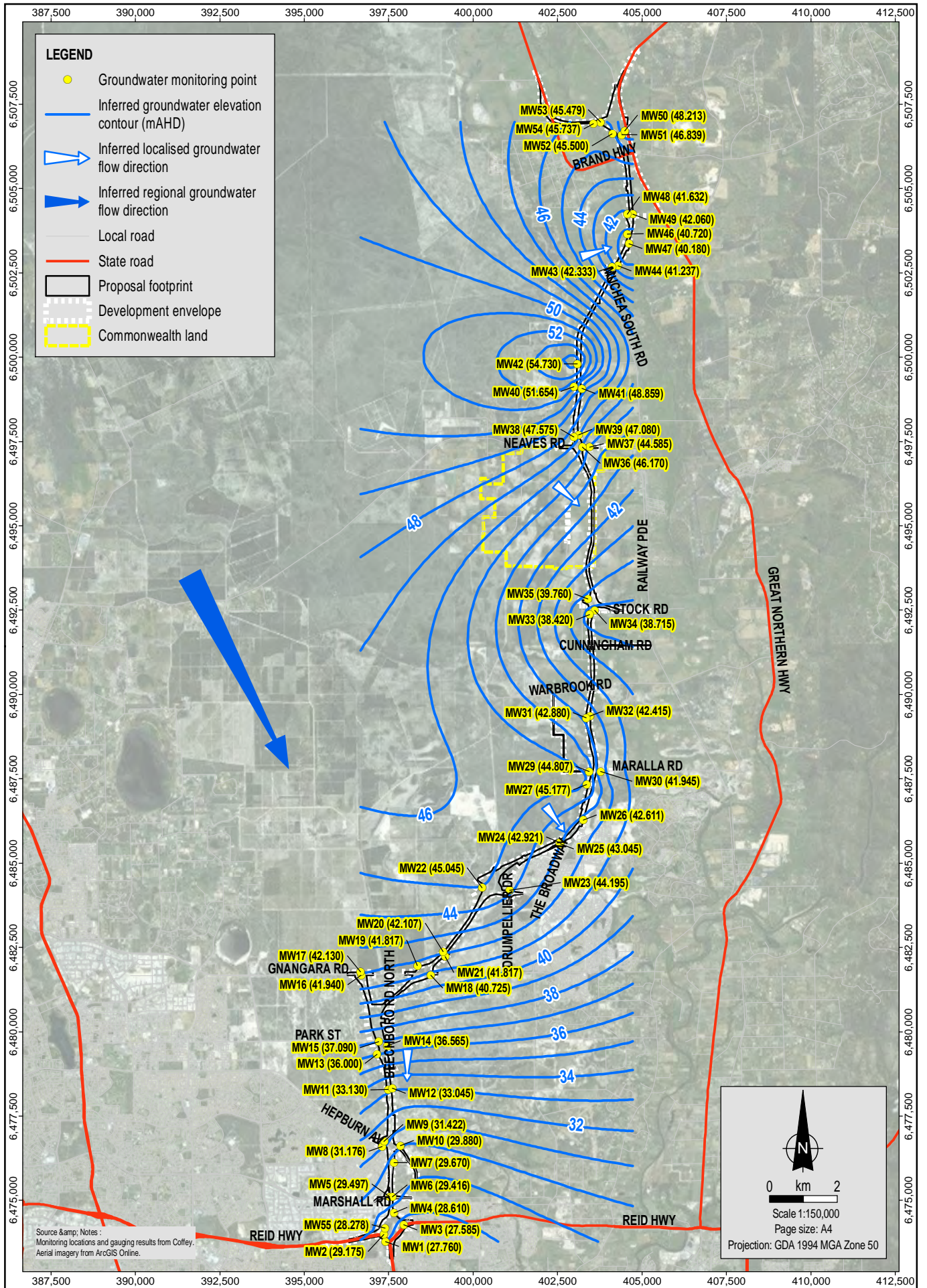
0 km 2

Scale 1:150,000

Page size: A4

Projection: GDA 1994 MGA Zone 50

Source & Notes :
Monitoring locations and gauging results from Coffey.
Aerial imagery from ArcGIS Online.



LEGEND

- Groundwater monitoring point
- Inferred groundwater elevation contour (mAHD)
- ▶ Inferred localised groundwater flow direction
- ▶ Inferred regional groundwater flow direction
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- State road
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- ▭ Development envelope
- ▭ Commonwealth land

0 km 2
 Scale 1:150,000
 Page size: A4
 Projection: GDA 1994 MGA Zone 50

Source & Notes :
 Monitoring locations and gauging results from Coffey.
 Aerial imagery from ArcGIS Online.



TABLES

Table 1
Groundwater Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW1	27/01/2016	2	-	-	4.130	8.265	-	-	6.56	112	0.5	1.08	12.4	21.8	305	Turbid
MW2	27/01/2016	2	-	-	2.808	4.675	-	-	5.70	-66	0.4	2.65	31.5	23.8	280	
MW3	27/01/2016	2	-	-	2.350	4.300	-	-	6.00	-164	0.3	0.20	2.4	25.3	191	Sight hydrogen sulfide odour
MW4	28/01/2016	2	40	138	3.605	4.600	-	-	6.38	76	0.2	0.37	4.3	22.9	105	
MW5	28/01/2016	2	100	30	2.310	4.300	-	-	5.58	-161	0.2	0.10	1.2	23.0	111	
MW6	28/01/2016	2	140	24	3.198	4.500	-	-	5.79	-155	0.5	0.35	4.3	25.4	354	
MW10	28/01/2016	2	-	-	2.531	4.345	-	-	5.83	-69	0.5	0.21	2.6	25.3	342	Insufficient water for field tests
MW11	29/01/2016	2	60	60	4.996	6.380	-	-	4.83	-30	0.7	0.04	0.4	21.2	468	
MW12	29/01/2016	2	50	90	5.282	7.200	-	-	5.07	162	0.5	0.03	0.4	20.0	316	
MW26	29/01/2016	2	75	6	5.385	7.298	-	-	4.74	123	0.3	1.18	13.7	22.1	195	
MW27	1/02/2016	2	100	15	5.656	7.580	-	-	4.64	6	0.1	0.17	1.9	19.2	65	
MW28	1/02/2016	2	90	9	4.007	6.385	-	-	4.27	112	0.3	0.11	1.2	19.6	195	
MW29	1/02/2016	2	75	20	3.055	5.010	-	-	4.93	-28	0.3	0.14	1.5	19.7	195	
MW30	1/02/2016	2	110	20	5.100	6.570	-	-	3.87	144	0.2	0.74	8.3	20.2	130	
MW31	1/02/2016	2	50	2	7.259	9.025	-	-	5.25	-95	0.2	0.11	1.3	22.9	130	
MW32	1/02/2016	2	90	15	2.194	4.085	-	-	5.33	-116	0.6	0.15	1.8	21.7	390	
MW36	1/02/2016	2	15	102	3.020	5.000	-	-	6.34	49	0.2	0.87	10.3	23.8	130	
MW37	2/02/2016	2	15	84	2.164	4.040	-	-	6.04	-97	0.1	0.15	1.8	24.6	65	
MW38	2/02/2016	2	135	219	1.325	4.050	-	-	6.09	-152	0.6	0.08	0.9	20.5	390	
MW39	2/02/2016	2	25	225	2.050	3.975	-	-	6.46	-174	0.4	0.32	3.6	21.8	260	Turbid
MW40	3/02/2016	2	25	225	-	-	-	-	4.78	-43	0.2	0.01	0.1	19.7	130	
MW41	3/02/2016	2	75	15	1.435	4.020	-	-	3.64	54	0.8	0.41	5.2	26.4	520	
MW42	2/02/2016	2	150	0	1.930	3.870	-	-	5.03	-2	0.2	1.90	21.5	21.3	130	
MW50	2/02/2016	2	125	15	1.615	7.480	-	-	5.46	66	8.8	0.53	6.7	25.0	5720	
MW51	2/02/2016	2	100	30	1.835	5.940	-	-	5.12	23	3.4	0.76	8.9	23.0	2210	
MW52	2/02/2016	2	100	15	1.983	4.001	-	-	6.43	53	35.8	0.30	4.0	22.7	23270	
MW55	3/02/2016	2	25	90	2.955	4.990	-	-	6.07	118	0.8	0.37	4.4	23.8	536	Sims metals
MW1	16/02/2016	3	120	50	4.265	8.280	None	Clear	7.02	122	0.5	2.08	24.0	22.5	338	
MW2	16/02/2016	3	45	135	2.920	4.680	Organic Matter	Turbid	5.81	-141	0.3	0.69	8.1	23.4	176	
MW3	16/02/2016	3	105	30	2.370	3.920	Sulphur	Slightly Cloudy	6.35	-175	0.2	0.68	8.4	26.4	156	sediment floating in sleeve, white jelly like
MW4	16/02/2016	3	36	65	3.750	5.580	None	Clear	7.02	152	0.1	1.50	18.7	26.4	85	
MW5	23/02/2016	3	18	115	2.490	4.220	Decaying	Cloudy	4.98	-42	0.2	0.38	4.5	23.2	124	sweet rotten smell
MW6	16/02/2016	3	39	190	3.210	4.775	None	Cloudy	5.70	-81	0.4	0.99	12.4	26.5	280	
MW10	23/02/2016	3	120	125	2.700	4.400	None	Slightly Cloudy	5.68	-99	0.3	0.10	1.2	24.3	182	
MW11	23/02/2016	3	18	65	5.075	6.661	Sulphur	Clear	4.19	81	0.8	0.70	7.7	20.3	520	
MW12	23/02/2016	3	30	65	5.370	7.105	Acidic	Clear	4.13	220	0.3	1.29	14.1	19.6	208	sweet smell, then sulphur at v bottom
MW26	19/02/2016	3	30	100	7.625	5.400	None	Cloudy	5.02	-75	0.4	0.07	0.7	21.0	241	
MW27	19/02/2016	3	15	100	4.440	6.440	None	Clear	4.43	-28	0.2	0.06	0.7	20.2	117	
MW28	19/02/2016	3	30	75	2.997	5.005	None	Clear	4.46	47	0.3	0.07	0.8	20.2	221	
MW29	22/02/2016	3	30	100	5.100	6.600	Sulphur	Clear	4.96	-76	0.3	0.11	1.3	20.0	202	
MW30	22/02/2016	3	30	50	7.300	9.300	None	Slightly Cloudy	3.91	69	0.2	0.42	4.7	20.6	137	
MW31	22/02/2016	3	30	50	2.100	4.300	None	Cloudy	5.22	-125	0.2	0.16	1.9	23.2	150	
MW32	22/02/2016	3	60	90	2.100	4.530	None	Slightly Cloudy	5.41	-140	0.4	0.08	0.9	21.9	273	
MW36	22/02/2016	3	30	80	3.121	5.000	None	Clear	5.99	56	0.1	0.53	6.4	25.1	91	
MW37	22/02/2016	3	45	60	2.283	4.050	Organic Matter	Clear	5.87	-64	0.1	0.77	9.4	25.3	91	many dead ants in sleeve
MW38	22/02/2016	3	84	155	1.563	3.060	Sulphur	Turbid	5.69	-125	0.7	0.23	2.7	22.1	423	
MW39	22/02/2016	3	99	75	2.225	3.980	Sulphur	Clear	6.35	-160	0.5	0.39	4.5	22.7	299	
MW40	18/02/2016	3	15	150	1.570	4.050	Sulphur	Clear	4.82	-92	0.3	0.01	0.1	19.9	163	
MW41	18/02/2016	3	10	150	1.990	3.895	Sulphur	Slightly Cloudy	3.63	53	0.8	0.41	5.1	26.4	533	
MW42	22/02/2016	3	15	50	0.092	3.460	Organic Matter	Cloudy	4.45	0	0.2	1.15	13.3	22.3	143	sediment bottom half
MW50	24/02/2016	3	100	80	2.005	5.910	None	Slightly Cloudy	5.65	-32	8.8	0.48	6.0	25.1	5694	
MW51	24/02/2016	3	60	100	2.149	4.000	None	Slightly Cloudy	5.59	-81	2.6	0.07	0.8	22.4	1684	
MW52	24/02/2016	3	420	50	1.997	4.270	None	Slightly Cloudy	6.56	-22	34.3	0.94	12.6	23.6	22276	
MW55	17/02/2016	3	39	25	4.430	5.970	Organic Matter	Clear	6.29	126	0.9	0.56	6.8	24.2	553	

Notes:
ID = Identification
mbTOC - metres below top of casing
m = metres
DO = Dissolved oxygen
TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
mg/L = milligrams per litre
°C = degrees Celsius

L = litres
mS/cm = milisiemens per centimetre
mV = millivolts

Table 1
Groundwater Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW1	15/03/2016	4	270	10	4.412	8.250	None	Cloudy	6.24	60	0.6	1.15	13.5	22.7	397	
MW2	15/03/2016	4	45	75	3.056	4.740	Organic Matter	Slightly Cloudy	6.16	-207	0.2	0.70	8.2	22.4	137	
MW3	15/03/2016	4	96	175	2.510	4.270	Organic Matter	Slightly Cloudy	6.24	-227	0.2	0.54	6.7	25.6	137	
MW4	15/03/2016	4	90	50	3.667	5.565	None	Slightly Cloudy	5.75	97	0.1	0.10	1.2	23.9	65	
MW5	15/03/2016	4	30	100	2.602	4.215	None	Cloudy	5.04	-142	0.2	0.05	0.5	22.9	124	
MW6	15/03/2016	4	45	100	3.371	4.770	None	Slightly Cloudy	4.86	-101	0.2	0.03	0.4	24.6	137	
MW10	17/03/2016	4	75	140	3.210	4.400	None	Cloudy	5.55	-82	0.2	0.96	11.6	24.2	156	dead ants
MW11	17/03/2016	4	12	165	5.110	6.665	Other	Clear	4.15	9	0.7	0.38	4.2	20.1	455	
MW12	17/03/2016	4	15	85	5.410	7.160	Other	-	4.17	161	0.3	0.33	3.6	19.2	195	
MW26	17/03/2016	4	15	80	5.829	7.520	None	Cloudy	4.29	1	0.4	0.23	2.5	20.5	234	
MW27	17/03/2016	4	30	50	4.095	6.340	None	Clear	4.27	0	0.2	0.08	0.9	19.9	111	
MW28	17/03/2016	4	15	50	3.174	4.980	None	Slightly Cloudy	4.37	95	0.3	0.07	0.7	20.1	176	
MW29	18/03/2016	4	45	75	5.195	6.545	None	Slightly Cloudy	4.76	-36	0.3	0.12	1.3	20.4	182	
MW30	18/03/2016	4	5	40	7.375	9.020	None	Slightly Cloudy	3.82	162	0.2	0.54	6.1	21.1	124	
MW31	18/03/2016	4	45	60	2.357	4.345	Sulfur	Slightly Cloudy	5.16	-99	0.2	0.14	1.7	23.8	150	
MW32	18/03/2016	4	60	75	2.466	4.475	Sulfur	Slightly Cloudy	5.28	-102	0.3	0.10	1.1	22.5	208	
MW36	18/03/2016	4	60	10	3.232	4.998	None	Clear	5.21	135	0.1	0.18	2.2	24.6	72	
MW37	18/03/2016	4	30	50	2.375	4.100	Organic Matter	Clear	5.25	-91	0.1	0.59	7.2	25.6	85	ants in sleeve
MW38	18/03/2016	4	60	135	1.665	3.120	Sulfur	Turbid	5.68	-173	0.5	0.17	1.9	20.8	338	
MW39	18/03/2016	4	30	100	2.442	4.040	Organic Matter	Slightly Cloudy	6.19	-194	0.4	0.68	7.7	21.8	247	
MW40	22/03/2016	4	60	75	1.417	4.020	Sulfur	Clear	4.80	-46	0.3	0.03	0.3	20.3	169	
MW41	22/03/2016	4	60	110	1.948	3.850	Sulfur	Slightly Cloudy	4.34	-39	0.5	0.08	0.9	25.9	345	
MW42	16/03/2016	4	30	75	-	3.530	Other	Clear	5.19	-81	0.2	0.47	5.4	21.9	124	
MW50	16/03/2016	4	100	150	2.180	5.895	None	Slightly Cloudy	5.41	-40	8.3	0.05	0.6	24.7	5389	
MW51	16/03/2016	4	75	90	2.222	4.005	None	Slightly Cloudy	5.94	-148	1.7	0.12	1.4	22.7	1086	
MW52	16/03/2016	4	10	420	2.141	4.270	None	Slightly Cloudy	6.37	54	38.0	0.09	1.3	23.0	24687	
MW55	15/03/2016	4	81	140	4.632	6.020	Organic Matter	Clear	6.03	25	0.8	0.40	4.9	24.8	527	
MW1	11/04/2016	5	120	50	4.491	8.240	None	Slightly Cloudy	6.30	109	0.6	1.30	15.0	22.7	371	
MW2	11/04/2016	5	30	150	3.130	4.745	Sulfur	Cloudy	5.26	-77	0.2	0.74	8.6	22.7	138	
MW3	11/04/2016	5	105	150	2.700	4.260	Sulfur	Turbid	6.28	-134	0.2	1.25	14.8	24.3	122	sediment, white flakes.
MW4	15/04/2016	5	60	70	3.920	5.620	None	Clear	6.71	50	0.1	0.44	5.1	22.9	70	
MW5	11/04/2016	5	30	75	2.608	4.200	Sulfur	Slightly Cloudy	5.11	-131	0.2	0.09	1.0	22.7	111	
MW6	11/04/2016	5	30	150	3.371	4.755	Sulfur	Slightly Cloudy	4.82	-80	0.2	0.21	2.4	23.8	111	
MW10	11/04/2016	5	60	125	2.908	4.215	None	Cloudy	5.48	-108	0.2	0.16	1.8	24.2	117	
MW11	15/04/2016	5	15	160	5.035	6.610	Sulfur	Clear	4.37	36	0.6	0.39	4.4	20.9	403	
MW12	15/04/2016	5	15	50	5.390	7.160	None	Clear	4.22	191	0.3	0.26	2.8	19.9	195	
MW26	15/04/2016	5	15	50	5.845	7.516	None	Slightly Cloudy	4.29	27	0.3	0.40	4.5	21.1	221	
MW27	15/04/2016	5	15	60	4.104	6.345	None	Clear	4.28	1	0.2	0.19	2.0	20.2	98	
MW28	15/04/2016	5	15	25	3.171	4.956	None	Slightly Cloudy	4.48	68	0.3	0.12	1.3	20.6	163	
MW29	14/04/2016	5	85	15	5.195	6.800	None	Slightly Cloudy	5.09	-26	0.3	0.13	1.4	20.5	166	
MW30	14/04/2016	5	15	50	7.405	9.600	None	Cloudy	4.07	216	0.2	1.33	14.9	21.4	108	
MW31	14/04/2016	5	15	50	2.265	4.325	Sulfur	Cloudy	5.12	-105	0.2	0.17	1.9	22.8	137	
MW32	14/04/2016	5	45	75	2.344	4.440	Sulfur	Slightly Cloudy	5.33	-117	0.3	0.07	0.8	21.9	221	
MW36	13/04/2016	5	18	30	2.970	5.060	None	Slightly Cloudy	5.85	63	0.1	0.96	11.8	25.7	70	
MW37	13/04/2016	5	30	60	1.955	3.000	None	Clear	5.44	22	0.1	1.17	14.3	25.4	63	
MW38	13/04/2016	5	75	115	1.155	3.130	Organic Matter	Cloudy	5.88	-127	0.5	0.08	0.9	21.6	325	
MW39	13/04/2016	5	40	60	1.844	4.040	None	Clear	6.69	-118	0.3	1.04	12.0	22.2	224	
MW40	14/04/2016	5	30	50	4.020	1.051	None	Cloudy	4.83	-60	0.2	0.02	0.2	19.9	156	
MW41	14/04/2016	5	-	-	1.792	3.840	None	Cloudy	3.63	35	0.6	0.79	9.3	23.7	364	ants
MW42	15/04/2016	5	15	90	0.052	3.550	Organic Matter	Cloudy	4.70	-3	0.2	0.25	2.8	20.8	109	
MW50	12/04/2016	5	60	100	1.273	6.035	None	Slightly Cloudy	5.49	-39	7.1	0.02	0.3	23.7	4641	missing padlock
MW51	12/04/2016	5	30	125	1.861	4.005	None	Slightly Cloudy	5.28	70	2.4	0.26	3.0	22.7	1541	
MW52	12/04/2016	5	25	60	1.351	4.260	None	Slightly Cloudy	6.23	48	29.1	0.30	3.8	23.2	18941	
MW55	11/04/2016	5	120	150	4.860	6.030	Hydrocarbon	Clear	6.07	-48	0.8	0.70	8.3	23.9	509	

Notes:
 ID = Identification
 mbTOC - metres below top of casing
 m = metres
 DO = Dissolved oxygen
 ** TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
 mg/L = milligrams per litre
 °C = degrees Celsius

L = litres
 mS/cm = millisiemens per centimetre
 mV = millivolts

Table 1
Groundwater Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW1	9/05/2016	6	25	90	4.456	8.220	None	Slightly Cloudy	6.61	64	0.5	0.47	5.4	22.0	332	
MW2	9/05/2016	6	125	60	3.115	4.750	None	Slightly Cloudy	5.15	-68	0.2	0.54	5.9	20.2	150	
MW3	9/05/2016	6	100	120	2.540	4.150	None	Slightly Cloudy	6.01	-127	0.2	1.21	14.0	22.8	150	
MW4	9/05/2016	6	50	105	3.805	5.620	None	Clear	6.24	25	0.1	0.62	7.0	21.5	85	
MW5	9/05/2016	6	100	30	2.595	4.265	Sulfur	Cloudy	4.61	-88	0.2	0.70	8.0	22.2	124	
MW6	9/05/2016	6	125	24	2.710	4.180	None	Cloudy	4.70	-67	0.2	0.89	10.2	22.3	137	
MW10	9/05/2016	6	200	75	2.935	0.000	None	Slightly Cloudy	5.23	-88	0.2	0.98	11.4	22.6	143	
MW11	6/05/2016	6	50	9	5.000	6.660	Organic Matter	Clear	3.84	1	0.8	0.39	4.4	20.6	507	
MW12	6/05/2016	6	75	9	5.365	7.140	None	Slightly Cloudy	3.82	157	0.4	1.30	14.2	19.5	260	
MW26	6/05/2016	6	100	30	5.731	7.520	None	Slightly Cloudy	4.52	44	0.4	0.16	1.8	20.6	280	
MW27	6/05/2016	6	25	15	4.077	6.340	None	Clear	4.02	96	0.2	0.70	7.7	20.0	156	
MW28	6/05/2016	6	50	30	3.109	4.970	None	Slightly Cloudy	4.54	95	0.3	0.44	4.9	20.2	208	
MW29	3/05/2016	6	90	30	5.131	6.525	None	Slightly Cloudy	5.91	-17	0.4	0.23	2.5	19.8	280	
MW30	3/05/2016	6	50	0	7.414	9.005	None	Slightly Cloudy	4.33	213	0.2	0.48	5.4	20.8	150	
MW31	3/05/2016	6	75	30	2.171	4.290	None	Cloudy	5.48	-66	0.3	0.19	2.2	22.0	182	
MW32	3/05/2016	6	75	30	2.239	4.430	None	Cloudy	5.56	-83	0.5	0.11	1.2	21.3	332	
MW36	9/05/2016	6	25	45	2.900	5.060	None	Slightly Cloudy	5.73	17	0.1	0.63	7.5	23.7	85	
MW37	9/05/2016	6	50	30	1.860	4.900	None	Slightly Cloudy	5.43	-3	0.1	2.14	24.9	22.8	65	
MW38	9/05/2016	6	225	90	1.080	3.140	Organic Matter	Cloudy	5.20	-81	5.2	1.41	15.4	18.7	3393	
MW39	9/05/2016	6	75	75	1.205	4.400	None	Slightly Cloudy	5.31	-14	0.4	4.94	53.0	18.6	280	
MW40	5/05/2016	6	75	30	0.821	4.020	None	Clear	4.98	3	0.3	0.04	0.4	19.4	215	
MW41	5/05/2016	6	100	15	1.707	3.780	Sulfur	Slightly Cloudy	3.66	140	0.9	1.27	14.5	21.8	592	
MW42	9/05/2016	6	150	15	0.515	3.535	Organic Matter	Cloudy	4.40	-29	0.2	0.98	10.8	20.1	150	
MW50	4/05/2016	6	60	75	1.079	6.000	None	Cloudy	5.37	125	10.1	0.08	1.0	22.0	6572	
MW51	4/05/2016	6	100	45	1.703	4.000	None	Slightly Cloudy	5.45	51	3.4	0.09	1.0	21.5	2236	
MW52	4/05/2016	6	75	180	1.130	4.460	None	Slightly Cloudy	6.12	84	31.9	2.20	28.2	21.8	20703	
MW55	9/05/2016	6	125	120	4.570	6.020	Organic Matter	Slightly Cloudy	5.54	-100	0.9	1.44	16.5	22.4	559	
MW1	28/06/2016	7	50	195	4.090	8.280	None	Clear	6.71	87	0.3	1.42	16.0	21.3	202	
MW2	27/06/2016	7	175	135	2.780	4.730	None	Slightly Cloudy	5.75	-12	0.3	0.67	7.0	17.6	189	
MW3	27/06/2016	7	100	150	2.010	4.100	None	Slightly Cloudy	6.12	-41	0.3	2.66	28.2	18.2	208	
MW4	28/06/2016	7	100	90	3.405	5.620	None	Clear	6.60	77	0.2	1.13	12.3	19.4	111	
MW5	28/06/2016	7	125	60	2.100	4.240	Organic Matter	Slightly Cloudy	5.46	-50	0.2	0.36	3.8	19.0	111	
MW6	28/06/2016	7	150	150	2.830	4.810	None	Clear	5.41	3	0.3	1.19	13.1	19.8	169	
MW10	24/06/2016	7	100	150	2.610	4.360	None	Slightly Cloudy	5.71	19	0.2	2.59	28.5	20.2	150	
MW11	24/06/2016	7	100	15	4.928	6.360	None	Slightly Cloudy	4.21	40	0.9	0.28	3.0	19.2	553	
MW12	24/06/2016	7	100	60	5.265	7.130	None	Clear	4.13	241	0.3	1.42	15.4	19.3	215	
MW26	27/06/2016	7	75	15	5.480	7.575	None	Slightly Cloudy	4.29	12	0.3	1.03	11.2	19.8	195	
MW27	27/06/2016	7	75	15	3.892	6.410	None	Slightly Cloudy	3.89	42	0.2	0.73	7.8	19.0	150	
MW28	27/06/2016	7	-	-	-	-	-	-	-	-	-	-	-	-	-	No access, normal route blocked
MW29	23/06/2016	7	50	45	4.886	6.565	None	Slightly Cloudy	5.05	-58	0.3	0.08	0.8	19.4	221	Tree roots in well
MW30	23/06/2016	7	25	15	7.186	9.030	None	Clear	4.00	188	0.2	0.27	3.0	20.5	143	
MW31	23/06/2016	7	50	45	1.681	4.345	None	Cloudy	5.84	-111	0.3	0.26	2.8	18.3	189	
MW32	23/06/2016	7	50	45	1.750	4.495	Sulfur	Clear	5.51	-123	0.7	0.12	1.3	17.9	462	
MW36	24/06/2016	7	25	90	2.525	0.000	None	Slightly Cloudy	6.00	72	0.1	1.58	17.3	20.0	78	
MW37	23/06/2016	7	75	30	1.520	4.100	None	Clear	5.75	62	0.1	4.06	43.4	18.8	59	
MW38	23/06/2016	7	375	-	0.750	3.130	Organic Matter	Cloudy	5.96	-112	2.9	0.24	2.4	14.4	1892	Too turbid for alkalinity field test
MW39	23/06/2016	7	50	150	1.030	4.030	Organic Matter	Slightly Cloudy	5.93	-61	0.5	0.43	4.4	17.1	299	
MW40	22/06/2016	7	-	-	-	-	-	-	-	-	-	-	-	-	-	No access, from land owner due to boggy conditions
MW41	22/06/2016	7	-	-	-	-	-	-	-	-	-	-	-	-	-	No access, from land owner due to boggy conditions
MW42	22/06/2016	7	75	45	0.260	-	Organic Matter	Cloudy	5.28	17	0.2	0.12	1.2	17.0	117	
MW50	21/06/2016	7	75	60	0.581	5.950	None	Turbid	5.46	-105	9.2	0.03	0.3	18.1	5967	
MW51	21/06/2016	7	75	45	1.264	4.060	None	Slightly Cloudy	5.57	-37	3.5	0.11	1.1	18.0	2288	
MW52	21/06/2016	7	50	30	0.590	4.335	None	Slightly Cloudy	5.44	100	18.1	3.49	38.8	17.2	11759	
MW55	27/06/2016	7	125	270	4.210	6.020	Hydrocarbon	Slightly Cloudy	5.72	6	0.7	0.54	5.9	20.6	449	

Notes:
ID = Identification
mbTOC - metres below top of casing
m = metres
DO = Dissolved oxygen
** TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
mg/L = milligrams per litre
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L = litres
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Table 1
Groundwater Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW1	17/03/2017	16	300	100	3.590	8.140	Unknown	Cloudy	6.45	132	0.61	2.55	30.0	23.0	396	
MW2	20/03/2017	16	240	75	2.420	4.740	Other	Slightly Cloudy	6.13	-23	0.27	0.27	3.2	23.1	174	
MW3	20/03/2017	16	210	100	1.955	4.070	Other	Slightly Cloudy	6.24	-69	0.26	0.61	7.2	24.3	169	
MW4	20/03/2017	16	150	75	3.300	5.550	Other	Slightly Cloudy	6.34	3	0.14	0.11	1.3	23.3	91	
MW5	13/03/2017	16	30	75	1.835	4.220	Organic Matter	Cloudy	5.02	2	0.18	0.36	4.2	22.8	118	
MW6	13/03/2017	16	45	175	2.578	4.800	Unknown	Clear	4.84	11	0.54	0.09	1.1	23.3	350	
MW10	17/03/2017	16	300	150	2.470	4.300	Unknown	Cloudy	6.1	67	0.27	0.75	9.7	24.2	176	
MW11	17/03/2017	16	30	75	4.810	6.630	Other	Clear	4.35	102	0.50	0.52	5.9	21.1	324	
MW12	17/03/2017	16	120	75	5.130	7.130	Other	Clear	4.78	287	0.18	2.10	23.6	20.7	117	
MW26	16/03/2017	16	30	100	5.020	7.585	Other	Slightly Cloudy	3.89	248	0.56	0.33	3.7	20.8	362	
MW27	16/03/2017	16	30	75	3.630	6.410	Other	Cloudy	4.16	56	0.16	0.18	2.0	20.6	103	
MW28	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	No Access
MW29	16/03/2017	16	120	100	4.620	6.500	Unknown	Slightly Cloudy	4.9	-4	0.20	0.62	7.0	20.8	128	
MW30	16/03/2017	16	15	50	6.880	9.000	Unknown	Slightly Cloudy	5.75	84	0.18	1.19	13.4	21.2	118	
MW31	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	No Access
MW32	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	No Access
MW36	15/03/2017	16	75	50	2.530	5.020	Unknown	Clear	5.43	108	0.09	1.09	13.2	24.9	61	
MW37	15/03/2017	16	120	50	1.590	4.090	Unknown	Clear	5.45	143	0.09	1.63	19.7	25.0	61	Dead ants in well
MW38	15/03/2017	16	210	125	0.920	3.130	Sulfur	Slightly Cloudy	5.44	-133	0.49	0.51	5.6	20.5	318	
MW39	15/03/2017	16	300	100	1.780	4.030	Unknown	Slightly Cloudy	5.74	-16	0.79	0.69	7.9	22.0	515	
MW40	16/03/2017	16	12	150	1.090	4.075	Other	Very Cloudy	4.88	-23	0.28	0.05	0.6	19.6	182	
MW41	16/03/2017	16	15	150	1.590	3.900	Sulfur	Very Cloudy	3.58	149	0.71	0.30	3.6	24.8	464	
MW42	16/03/2017	16	20	100	0.575	3.500	Sulfur	Very Cloudy	4.19	42	0.18	0.05	0.6	20.5	116	
MW50	14/03/2017	16	270	150	0.635	6.000	Unknown	Cloudy	5.65	66	4.93	8.15	98.7	24.0	3203	
MW51	14/03/2017	16	150	100	1.440	4.010	Sulfur	Cloudy	5.33	-29	7.85	6.30	76.8	23.7	5101	
MW52	14/03/2017	16	300	100	0.890	4.300	Unknown	Clear	4.82	192	12.57	4.19	53.2	25.0	8168	
MW55	20/03/2017	16	135	200	4.000	6.100	Other	Slightly Cloudy	5.95	136	1.07	0.35	4.1	23.0	693	
MW1	11/04/2017	17	705	50	3.820	8.140	Other	Clear	6.22	107	0.64	3.00	34.5	22.2	413	
MW2	11/04/2017	17	120	120	2.515	4.740	Other	Slightly Cloudy	6.65	-22	0.53	0.16	1.8	21.7	345	
MW3	11/04/2017	17	90	150	2.035	4.070	Other	Slightly Cloudy	6.2	-95	0.33	0.11	1.3	22.7	216	
MW4	11/04/2017	17	45	25	3.380	5.550	Other	Clear	5.87	0	0.14	0.07	0.8	22.8	92	
MW5	11/04/2017	17	50	125	1.973	4.220	Other	Clear	4.94	-68	0.20	0.16	1.8	21.8	133	
MW6	11/04/2017	17	90	100	2.724	4.800	Other	Clear	4.67	-28	0.27	0.13	1.5	22.5	174	
MW10	11/04/2017	17	120	150	2.560	4.300	Other	Slightly Cloudy	6.1	-62	0.33	0.08	0.9	23.6	216	
MW11	12/04/2017	17	15	160	4.730	6.630	Other	Slightly Cloudy	4.77	81	0.70	0.34	3.8	20.9	457	
MW12	11/04/2017	17	45	90	5.095	7.130	Other	Clear	4.5	285	0.20	2.37	26.5	20.7	130	
MW26	12/04/2017	17	15	75	5.169	7.585	Other	Slightly Cloudy	4.14	256	0.67	2.12	23.6	20.7	436	
MW27	12/04/2017	17	60	50	3.693	6.410	Sulfur	Clear	4.78	39	0.18	0.16	1.7	20.3	114	
MW28	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	No Access
MW29	13/04/2017	17	-	-	4.723	6.500	Other	Turbid	5.11	42	0.20	0.14	1.5	20.2	131	Too turbid for field tests
MW30	13/04/2017	17	180	50	6.995	9.000	Other	Slightly Cloudy	5.7	118	0.19	1.29	14.4	21.0	122	
MW31	13/04/2017	17	60	50	1.750	4.300	Other	Clear	5.4	61	0.33	0.08	0.9	22.2	213	
MW32	13/04/2017	17	150	75	1.865	4.500	Other	Clear	5.76	-50	0.43	0.29	3.3	21.3	278	
MW36	18/04/2017	17	30	60	2.690	5.020	Other	Slightly Cloudy	5.69	25	0.09	0.30	3.7	24.3	56	
MW37	18/04/2017	17	30	75	1.735	4.090	Other	Slightly Cloudy	5.86	-52	0.13	0.40	4.7	23.3	82	
MW38	18/04/2017	17	75	100	1.115	3.130	Other	Cloudy	5.98	-122	0.55	0.05	0.5	18.9	357	
MW39	18/04/2017	17	90	100	1.910	4.030	Other	Slightly Cloudy	6.2	-83	0.49	0.18	1.9	19.6	317	
MW40	18/04/2017	17	0	100	0.996	4.075	Other	Clear	5.28	-22	0.31	-0.01	-0.1	19.0	205	
MW41	18/04/2017	17	0	150	1.711	3.900	Other	Clear	3.8	76	0.77	0.36	4.3	23.4	502	
MW42	18/04/2017	17	30	75	0.630	3.500	Other	Clear	4.77	10	0.21	0.00	0.0	20.1	138	
MW50	10/04/2017	17	150	75	1.317	6.000	Other	Cloudy	5.49	86	8.79	1.82	21.7	22.7	5716	
MW51	10/04/2017	17	150	100	1.901	4.010	Other	Clear	5.36	-110	4.78	0.01	0.1	21.2	3106	
MW52	10/04/2017	17	420	50	1.410	4.300	Other	Clear	6.12	114	27.70	0.63	7.9	22.2	18003	
MW55	18/04/2017	17	81	100	4.200	6.100	Other	Slightly Cloudy	5.93	70	0.90	0.18	2.1	24.7	587	

Notes:
 ID = Identification
 mbTOC - metres below top of casing
 m = metres
 DO = Dissolved oxygen
 ** TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
 mg/L = milligrams per litre
 °C = degrees Celsius

L = litres
 mS/cm = millisiemens per centimetre
 mV = millivolts

Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL2-1	21/12/2015	1	25	30	7.32	46	0.20	8.27	-	31.2	
SWL2-2	21/12/2015	1	25	30	7.35	48	0.20	8.24	-	28.6	
SWL2-3	21/12/2015	1	15	30	7.34	47	0.20	8.25	-	29.6	
SWL4-1	21/12/2015	1	12	42	6.50	85	0.50	5.00	-	22.8	
SWL4-2	21/12/2015	1	25	36	6.41	87	0.50	3.89	-	21.8	
SWL4-3	21/12/2015	1	25	45	6.43	81	0.30	4.74	-	21.5	
SW15-1	21/12/2015	1	25	15	5.41	117	0.30	7.14	-	24.8	
SW15-2	21/12/2015	1	24	9	4.47	130	0.30	6.46	-	22.1	
SWL16-1	21/12/2015	1	25	48	6.47	-2	0.30	6.38	-	21.7	
SWL16-2	21/12/2015	1	20	42	6.52	-82	0.40	6.13	-	20.8	
SWL16-3	21/12/2015	1	25	30	6.56	22	0.40	5.68	-	25.7	
SWL2-1	28/01/2016	2	20	204	7.63	74	0.20	8.20	100.9	25.9	
SWL2-2	28/01/2016	2	20	165	7.96	89	0.37	8.26	100.5	25.2	
SWL2-3	28/01/2016	2	30	174	7.66	80	0.38	8.16	100.5	25.8	
SWL3-1	28/01/2016	2	20	108	7.28	114	0.42	7.81	93.7	24.5	
SWL3-2	28/01/2016	2	20	114	7.56	121	0.41	7.91	94.5	24.3	
SWL3-3	28/01/2016	2	20	117	7.71	100	0.43	8.42	103.0	25.6	
SWL4-1	2/02/2016	2	177	40	7.07	88	0.83	1.57	16.4	17.1	
SWL4-2	2/02/2016	2	177	40	6.92	100	0.40	4.67	56.7	24.9	
SW15-1	3/02/2016	2	40	102	6.08	78	0.34	4.02	46.7	22.8	
SW15-2	3/02/2016	2	25	96	5.70	109	0.33	2.39	27.8	22.9	
SWL16-1	2/02/2016	2	15	120	6.74	32	0.65	12.48	140.0	20.8	
SWL16-2	2/02/2016	2	15	105	7.15	80	0.65	11.57	127.9	20.2	
SWL16-3	2/02/2016	2	15	117	7.20	88	0.65	12.80	142.7	20.6	
SWL17-1	3/02/2016	2	75	10	3.98	116	0.25	4.12	44.1	18.6	
SWL17-2	3/02/2016	2	90	20	3.98	115	0.25	4.10	43.9	18.6	
SWL17-3	3/02/2016	2	75	10	3.85	109	0.28	0.34	3.5	16.9	

Notes:
SWL= Surface water location
ID = identification
mg/L: milligrams per litre
mS/cm = milliemen per centimetre
mV = millivolts
°C = degrees Celsius
- : Sample not analysed

Table 2
Surface Water Field Results
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December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	23/02/2016	3	90	10	6.33	-11	0.49	6.20	73.0	23.3	
SWL1-2	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL1-3	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL2-1	19/02/2016	3	50	30	6.98	85	0.35	9.53	112.8	23.7	
SWL2-2	19/02/2016	3	30	25	6.84	92	0.36	9.69	113.9	23.4	
SWL2-3	19/02/2016	3	30	25	6.60	55	0.36	9.54	112.2	23.4	
SWL3-1	19/02/2016	3	60	30	7.63	96	0.40	9.27	116.2	26.6	
SWL3-2	19/02/2016	3	69	25	7.31	48	0.40	9.18	111.9	25.3	
SWL3-3	19/02/2016	3	75	30	7.50	74	0.40	9.18	113.7	26.1	
SWL4-1	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL4-2	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL4-3	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL5-1	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL5-2	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL5-3	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL6-1	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL6-2	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL6-3	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL7-1	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL7-2	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL7-3	23/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL8-1	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL8-2	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL8-3	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL9-1	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL9-2	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL9-3	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL10-1	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL10-2	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL10-3	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL11-1	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL11-2	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL11-3	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL12-1	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL12-2	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL12-3	19/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	3	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	3	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	3	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	3	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	3	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	3	-	-	-	-	-	-	-	-	No Access
SW15-1	22/02/2016	3	45	50	5.38	-72	0.35	2.53	29.3	22.4	
SW15-2	22/02/2016	3	45	50	5.25	-56	0.34	1.39	16.2	22.9	
SWL16-1	22/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL16-2	22/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL16-3	22/02/2016	3	-	-	-	-	-	-	-	-	Dry
SWL17-1	18/02/2016	3	30	50	4.13	87	0.28	3.30	37.4	21.2	
SWL17-2	18/02/2016	3	30	50	4.39	-73	0.25	0.35	3.8	19.3	
SWL17-3	18/02/2016	3	30	50	4.18	63	0.27	2.13	23.4	19.8	
SWL20-1	24/02/2016	3	90	15	6.74	-276	10.50	4.02	45.4	19.5	
SWL20-2	24/02/2016	3	90	15	6.87	-161	10.40	2.83	32.0	19.7	
SWL20-3	24/02/2016	3	90	15	6.83	-240	10.03	0.01	0.1	19.5	

Notes:
SWL= Surface water location
ID = identification
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°C = degrees Celsius
- : Sample not analysed

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Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	15/03/2016	4	120	15	-	-	-	-	-	-	Dry
SWL1-2	15/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL1-3	15/03/2016	4	-	-	6.17	20	0.53	2.60	31.3	24.3	
SWL2-1	15/03/2016	4	30	20	6.92	28	0.35	8.59	106.7	26.0	
SWL2-2	15/03/2016	4	30	20	6.83	16	0.35	8.43	105.5	26.5	
SWL2-3	15/03/2016	4	30	20	6.66	9	0.36	8.25	102.7	26.1	
SWL3-1	15/03/2016	4	105	25	7.26	14	0.40	8.07	99.1	25.3	
SWL3-2	15/03/2016	4	105	25	6.93	-11	0.40	7.89	102.1	28.3	
SWL3-3	15/03/2016	4	105	25	7.04	-5	0.40	7.91	100.7	27.4	
SWL4-1	15/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL4-2	15/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL4-3	15/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL5-1	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL5-2	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL5-3	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL6-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL6-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL6-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL7-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL7-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL7-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL8-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL8-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL8-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL9-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL9-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL9-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL10-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL10-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL10-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL11-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL11-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL11-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL12-1	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL12-2	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL12-3	17/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	4	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	4	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	4	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	4	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	4	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	4	-	-	-	-	-	-	-	-	No Access
SW15-1	21/03/2016	4	30	25	5.16	-75	0.32	0.54	6.4	23.5	Location dry, sampled another drain 500m north
SW15-2	21/03/2016	4	30	25	5.14	-64	0.33	0.84	9.8	22.4	Location dry, sampled another drain 500m north
SWL16-1	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL16-2	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL16-3	18/03/2016	4	-	-	-	-	-	-	-	-	Dry
SWL17-1	22/03/2016	4	15	25	4.25	3	0.25	0.25	2.7	19.2	
SWL17-2	22/03/2016	4	15	25	3.97	89	0.26	3.89	43.9	20.8	
SWL17-3	22/03/2016	4	15	25	4.22	77	0.23	3.00	33.5	20.2	
SWL20-1	16/03/2016	4	90	10	6.63	-278	9.09	1.48	18.1	23.6	
SWL20-2	16/03/2016	4	90	10	6.51	-201	10.76	0.34	4.2	23.8	
SWL20-3	16/03/2016	4	90	10	6.83	-189	11.65	0.04	0.5	23.6	

Notes:
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- : Sample not analysed

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Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	11/04/2016	5	45	10	5.81	113	0.37	3.51	38.9	20.6	
SWL1-2	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL1-3	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL2-1	11/04/2016	5	30	15	6.47	56	0.30	8.88	99.0	20.8	
SWL2-2	11/04/2016	5	30	15	6.60	55	0.30	9.08	101.1	20.8	
SWL2-3	11/04/2016	5	30	15	6.27	50	0.30	9.19	102.7	20.9	
SWL3-1	11/04/2016	5	60	72	7.42	25	0.33	8.73	97.1	20.8	
SWL3-2	11/04/2016	5	60	70	7.11	6	0.33	8.73	97.5	21.0	
SWL3-3	11/04/2016	5	55	72	7.33	-2	0.33	8.74	97.3	20.8	
SWL4-1	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL4-2	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL4-3	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL5-1	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL5-2	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL5-3	11/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL6-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL6-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL6-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL7-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL7-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL7-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL8-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL8-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL8-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL9-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL9-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL9-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL10-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL10-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL10-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL11-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL11-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL11-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL12-1	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL12-2	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL12-3	15/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	5	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	5	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	5	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	5	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	5	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	5	-	-	-	-	-	-	-	-	No Access
SW15-1	13/04/2016	5	15	10	5.25	15	0.27	2.89	35.1	25.0	
SW15-2	13/04/2016	5	15	10	5.79	40	0.34	0.48	5.6	22.6	
SWL16-1	13/04/2016	5	80	140	6.25	-77	0.85	0.60	6.6	19.7	
SWL16-2	13/04/2016	5	-	-	-	-	-	-	-	-	Dry
SWL16-3	13/04/2016	5	78	140	5.88	-35	1.79	1.38	16.2	22.9	
SWL17-1	14/04/2016	5	0	15	3.94	72	0.28	0.82	8.8	18.5	
SWL17-2	14/04/2016	5	0	15	3.97	50	0.29	0.81	8.6	18.1	
SWL17-3	14/04/2016	5	0	15	4.13	6	0.28	0.13	1.4	18.0	
SWL20-1	13/04/2016	5	15	10	6.17	34	5.28	2.66	30.1	20.6	
SWL20-3	13/04/2016	5	15	10	6.64	-3	4.90	4.18	47.4	20.8	
SWL20-2	13/04/2016	5	15	10	6.41	22	5.24	3.11	35.2	20.7	

Notes:
SWL= Surface water location
ID = identification
mg/L: milligrams per litre
mS/cm = millisiemen per centimetre
mV = millivolts
°C = degrees Celsius
- : Sample not analysed

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December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	9/05/2016	6	25	60	6.43	69	0.34	3.01	29.1	14.3	
SWL1-2	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL1-3	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL2-1	9/05/2016	6	15	60	5.93	36	0.35	9.51	95.9	16.2	
SWL2-2	9/05/2016	6	15	50	6.05	34	0.35	9.18	92.8	16.3	
SWL2-3	9/05/2016	6	15	60	6.12	34	0.35	9.31	94.2	16.3	
SWL3-1	9/05/2016	6	25	150	6.35	-14	0.37	8.65	88.0	16.6	
SWL3-2	9/05/2016	6	20	90	6.55	23	0.36	8.98	92.6	17.2	
SWL3-3	9/05/2016	6	25	90	6.58	13	0.36	8.64	87.6	16.4	
SWL4-1	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL4-2	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL4-3	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL5-1	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL5-2	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL5-3	9/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL6-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL6-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL6-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL7-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL7-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL7-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	6	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	6	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	6	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL9-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL9-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL10-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL10-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL10-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL11-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL11-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL11-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL12-1	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL12-2	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL12-3	6/05/2016	6	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	6	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	6	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	6	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	6	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	6	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	6	-	-	-	-	-	-	-	-	No Access
SW15-1	3/05/2016	6	25	30	5.09	42	0.37	5.77	58.3	16.0	
SW15-2	3/05/2016	6	25	30	5.58	-22	0.38	0.05	0.5	16.4	
SWL16-1	9/05/2016	6	25	70	6.25	-21	0.52	6.09	63.4	17.0	
SWL16-2	9/05/2016	6	25	75	6.12	-12	0.68	5.53	56.1	15.8	
SWL16-3	9/05/2016	6	20	75	6.13	22	0.98	5.59	54.4	13.9	
SWL17-1	5/05/2016	6	50	30	4.10	120	0.39	0.56	5.7	15.9	
SWL17-2	5/05/2016	6	50	30	3.97	120	0.37	1.27	12.9	16.2	
SWL17-3	5/05/2016	6	50	30	4.14	99	0.38	1.21	12.3	15.9	
SWL20-1	4/05/2016	6	25	60	6.00	83	5.18	6.48	66.7	15.8	
SWL20-2	4/05/2016	6	25	60	6.09	58	5.58	1.39	14.2	15.5	
SWL20-3	4/05/2016	6	25	60	6.03	61	5.57	0.56	5.8	15.4	

Notes:
SWL= Surface water location
ID = identification
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- : Sample not analysed

Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	28/06/2016	7	25	45	5.91	45	0.42	3.50	34.8	14.9	
SWL1-2	28/06/2016	7	25	45	5.89	41	0.40	2.41	22.9	12.9	
SWL1-3	28/06/2016	7	25	45	5.88	63	0.22	6.47	60.3	12.0	
SWL2-1	27/06/2016	7	35	70	7.06	111	0.28	10.14	101.0	15.2	
SWL2-2	27/06/2016	7	25	75	6.56	58	0.28	9.82	94.8	14.0	
SWL2-3	27/06/2016	7	25	75	6.46	58	0.28	9.70	94.1	14.2	
SWL3-1	27/06/2016	7	25	220	6.83	45	0.30	8.84	86.5	14.5	
SWL3-2	27/06/2016	7	25	225	6.81	69	0.29	8.78	86.0	14.5	
SWL3-3	27/06/2016	7	30	225	6.83	58	0.30	8.66	84.6	14.4	
SWL4-1	28/06/2016	7	25	30	5.85	-16	0.65	4.59	47.6	16.8	
SWL4-2	28/06/2016	7	25	30	5.90	22	0.63	4.05	40.0	14.5	
SWL4-3	28/06/2016	7	25	30	5.99	-56	0.61	5.62	52.4	12.0	
SWL5-1	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL5-2	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL5-3	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL6-1	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL6-2	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL6-3	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL7-1	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL7-3	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL7-2	24/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	7	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	7	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	7	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL9-2	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL9-3	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL10-1	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL10-2	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL10-3	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL11-1	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL11-2	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL11-3	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL12-1	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL12-2	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL12-3	27/06/2016	7	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	7	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	7	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	7	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	7	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	7	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	7	-	-	-	-	-	-	-	-	No Access
SW15-1	23/06/2016	7	50	15	4.97	115	0.41	5.83	57.7	14.9	
SW15-2	23/06/2016	7	50	15	4.82	82	0.40	5.65	56.1	15.1	
SWL16-1	23/06/2016	7	50	150	6.30	-32	0.85	3.20	30.8	13.6	
SWL16-2	23/06/2016	7	25	150	6.71	-4	0.49	5.77	55.5	13.7	
SWL16-3	23/06/2016	7	25	150	6.35	-170	1.77	1.57	15.6	15.1	
SWL17-1	22/06/2016	7	125	30	3.73	213	0.49	4.05	39.6	14.2	
SWL17-2	22/06/2016	7	125	30	3.57	249	0.58	4.24	41.5	14.2	
SWL17-3	22/06/2016	7	125	30	3.46	265	0.78	4.64	45.4	14.2	
SWL20-1	21/06/2016	7	25	30	5.72	46	4.29	5.85	57.2	13.6	
SWL20-3	21/06/2016	7	25	30	5.89	-189	5.21	0.45	4.5	13.6	
SWL20-2	21/06/2016	7	25	30	5.79	49	4.46	2.86	27.7	13.3	

Notes:
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Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	18/07/2016	8	10	15	6.55	90	0.10	7.50	74.3	15.1	
SWL1-2	18/07/2016	8	10	15	6.58	89	0.13	9.36	93.5	15.5	
SWL1-3	18/07/2016	8	10	15	6.62	82	0.14	9.86	100.5	16.5	
SWL2-1	19/07/2016	8	25	30	6.90	-2	0.32	9.96	96.7	14.3	
SWL2-2	19/07/2016	8	25	30	6.90	-5	0.32	10.00	97.3	14.5	
SWL2-3	19/07/2016	8	25	30	6.86	-8	0.27	10.17	99.5	14.7	
SWL3-1	19/07/2016	8	30	50	6.88	-2	0.35	9.76	98.1	15.9	
SWL3-2	19/07/2016	8	30	50	6.74	-8	0.34	9.31	91.0	14.6	
SWL3-3	19/07/2016	8	25	50	6.79	-5	0.35	9.26	89.9	14.3	
SWL4-1	19/07/2016	8	25	30	5.87	60	0.63	6.65	70.1	18.0	
SWL4-2	19/07/2016	8	25	30	5.94	75	0.62	10.67	113.6	18.5	
SWL4-3	19/07/2016	8	25	30	6.48	10	0.68	10.47	111.8	18.6	
SWL5-1	18/07/2016	8	25	15	5.98	26	0.17	6.78	62.6	11.9	
SWL5-2	18/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL5-3	18/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL6-1	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL6-2	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL6-3	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL7-1	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL7-3	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL7-2	15/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	8	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	8	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	8	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL9-2	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL9-3	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL10-1	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL10-2	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL10-3	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL11-1	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL11-2	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL11-3	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL12-1	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL12-2	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL12-3	19/07/2016	8	-	-	-	-	-	-	-	-	Dry
SWL13-1	-	8	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	8	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	8	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	8	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	8	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	8	-	-	-	-	-	-	-	-	No Access
SW15-1	14/07/2016	8	25	30	4.88	100	0.51	6.31	56.8	10.6	
SW15-2	14/07/2016	8	25	30	4.95	104	0.52	6.42	57.5	10.5	
SWL16-1	14/07/2016	8	40	45	6.31	-69	1.09	1.78	16.1	10.7	
SWL16-2	14/07/2016	8	50	45	6.57	-98	0.52	7.12	64.2	10.7	
SWL16-3	14/07/2016	8	50	40	6.65	-46	0.54	8.33	74.1	10.2	
SWL17-1	13/07/2016	8	75	30	3.89	96	0.67	6.06	54.3	10.8	
SWL17-2	13/07/2016	8	80	30	3.69	113	0.74	6.76	60.6	10.9	
SWL17-3	13/07/2016	8	75	30	3.64	119	0.79	7.52	66.5	10.3	
SWL20-1	18/07/2016	8	10	45	5.74	102	3.28	5.89	55.1	11.9	
SWL20-3	18/07/2016	8	10	45	5.74	103	4.17	2.52	23.8	12.3	
SWL20-2	18/07/2016	8	10	45	5.73	106	4.05	2.05	19.4	12.4	

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Surface Water Field Results
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ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	25/08/2016	9	10	45	6.84	31	0.36	8.69	88.6	16.7	
SWL1-2	25/08/2016	9	10	45	6.94	37	0.34	3.82	37.2	14.5	
SWL1-3	25/08/2016	9	10	45	7.03	24	0.24	9.11	88.9	14.6	
SWL2-1	25/08/2016	9	25	45	7.17	17	0.27	10.11	102.6	16.3	
SWL2-2	25/08/2016	9	25	45	7.22	18	0.28	10.01	99.7	15.5	
SWL2-3	25/08/2016	9	25	45	7.21	16	0.29	10.06	102.1	16.3	
SWL3-1	24/08/2016	9	25	60	6.63	4	0.30	9.76	97.7	15.8	
SWL3-2	24/08/2016	9	25	60	6.87	6	0.30	9.76	97.0	15.4	
SWL3-3	24/08/2016	9	25	60	6.91	11	0.29	10.35	107.7	17.6	
SWL4-1	24/08/2016	9	25	45	5.73	43	0.64	6.83	71.9	18.2	
SWL4-2	24/08/2016	9	20	40	6.08	54	0.64	11.97	125.9	18.2	
SWL4-3	24/08/2016	9	20	40	6.15	53	0.63	10.91	112.8	17.3	
SWL5-1	23/08/2016	9	25	15	5.15	156	0.14	9.48	89.3	13.0	
SWL5-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL5-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL6-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL6-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL6-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL7-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL7-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL7-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL8-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL8-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL8-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL9-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL9-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL9-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL10-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL10-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL10-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL11-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL11-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL11-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL12-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL12-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL12-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL13-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL13-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL13-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL14-1	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL14-2	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL14-3	22/08/2016	9	-	-	-	-	-	-	-	-	Dry
SWL 15-1	19/08/2016	9	35	60	4.93	164	0.13	9.46	91.4	14.2	
SWL15-2	19/08/2016	9	35	60	7.64	-13	0.38	8.08	79.8	15.0	
SWL16-1	18/08/2016	9	50	45	6.30	11	0.58	1.96	18.0	11.6	
SWL16-2	18/08/2016	9	90	45	6.70	-15	0.41	7.14	66.4	12.2	
SWL16-3	18/08/2016	9	60	84	6.74	-14	0.53	6.88	62.0	10.8	
SWL17-1	19/08/2016	9	50	30	3.67	115	0.52	6.71	67.6	14.9	
SWL17-2	19/08/2016	9	50	30	-	-	-	-	-	-	
SWL17-3	19/08/2016	9	50	30	-	-	-	-	-	-	
SWL20-1	18/08/2016	9	15	50	6.47	85	3.47	8.18	82.7	15.1	
SWL20-2	18/08/2016	9	15	50	6.51	91	3.41	8.22	88.6	18.2	
SWL20-3	18/08/2016	9	15	45	6.33	-37	3.43	8.53	90.2	17.4	

Notes:
SWL= Surface water location
ID = identification
mg/L: milligrams per litre
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mV = millivolts
°C = degrees Celsius
- : Sample not analysed

Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	4/10/2016	10	25	60	6.56	140	0.28	4.26	44.0	17.0	
SWL1-2	4/10/2016	10	25	60	6.48	151	0.35	4.60	48.1	17.6	
SWL1-3	4/10/2016	10	25	60	6.46	120	0.35	7.58	79.7	17.9	
SWL2-1	4/10/2016	10	25	75	7.40	75	0.34	10.43	108.7	17.4	
SWL2-2	4/10/2016	10	25	75	7.41	80	0.35	9.77	103.0	18.0	
SWL2-3	4/10/2016	10	25	75	7.57	104	0.34	9.75	103.8	18.5	
SWL3-1	22/09/2016	10	10	60	7.34	-3	0.34	10.60	110.0	16.9	
SWL3-2	22/09/2016	10	10	60	7.02	-6	0.32	9.76	103.1	17.7	
SWL3-3	22/09/2016	10	10	60	7.25	-4	0.32	10.34	108.5	17.4	
SWL4-1	29/09/2016	10	25	30	6.49	2	0.63	7.41	80.7	19.6	
SWL4-2	29/09/2016	10	25	30	6.40	103	0.64	10.71	115.6	19.2	
SWL4-3	29/09/2016	10	25	30	6.95	10	0.61	17.36	183.5	18.0	
SWL5-1	3/10/2016	10	15	15	4.93	211	0.13	8.09	80.2	15.1	
SWL5-2	3/10/2016	10	-	-	-	-	-	-	-	-	Dry
SWL5-3	3/10/2016	10	-	-	-	-	-	-	-	-	Dry
SWL6-1	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL6-2	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL6-3	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL7-1	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL7-3	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL7-2	23/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	10	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	10	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	10	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL9-2	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL9-3	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL10-1	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL10-2	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL10-3	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL11-1	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL11-2	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL11-3	29/09/2016	10	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	10	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	10	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	10	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	10	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	10	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	10	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	10	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	10	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	10	-	-	-	-	-	-	-	-	No Access
SW15-1	27/09/2016	10	75	9	4.97	44	0.37	5.85	58.3	14.9	
SW15-2	27/09/2016	10	75	9	5.01	40	0.37	5.71	56.9	14.9	
SWL16-1	27/09/2016	10	50	90	6.17	-40	0.55	0.95	9.2	13.8	
SWL16-2	27/09/2016	10	25	45	6.42	-65	0.40	3.68	37.0	15.3	
SWL16-3	27/09/2016	10	0	0	6.42	4	0.42	6.31	63.6	15.5	
SWL17-1	28/09/2016	10	75	30	3.75	122	0.46	4.62	43.6	12.9	
SWL17-2	28/09/2016	10	75	30	3.72	172	0.50	5.43	54.0	15.3	
SWL17-3	28/09/2016	10	75	30	3.71	156	0.50	5.82	56.6	14.2	
SWL20-1	28/09/2016	10	10	15	6.38	17	3.55	3.27	30.4	11.8	
SWL20-3	28/09/2016	10	10	15	6.32	36	3.11	7.31	68.4	12.1	
SWL20-2	28/09/2016	10	10	15	6.34	9	3.47	2.97	27.7	11.9	

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Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	1/11/2016	11	25	60	6.38	91	0.41	5.10	55.5	19.4	
SWL1-2	1/11/2016	11	25	60	6.24	106	0.41	4.35	47.7	20.0	
SWL1-3	1/11/2016	11	25	60	6.06	124	0.36	1.78	19.1	18.6	
SWL2-1	1/11/2016	11	25	45	6.88	92	0.38	9.35	108.5	22.7	
SWL2-2	1/11/2016	11	25	45	7.16	86	0.36	9.42	107.2	21.6	
SWL2-3	1/11/2016	11	25	45	7.07	90	0.39	9.68	107.7	20.6	
SWL3-1	1/11/2016	11	30	50	6.84	9	0.33	9.16	110.8	24.9	
SWL3-2	1/11/2016	11	30	50	7.00	16	0.35	9.07	110.1	25.0	
SWL3-3	1/11/2016	11	30	50	7.14	20	0.34	9.12	111.6	25.5	
SWL4-1	27/10/2016	11	25	30	5.84	26	0.67	6.48	71.2	20.0	
SWL4-2	27/10/2016	11	25	30	5.94	1	0.68	8.75	98.2	21.1	
SWL4-3	27/10/2016	11	25	30	5.95	27	0.68	9.30	105.4	21.6	
SWL5-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL5-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL5-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL6-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL6-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL6-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL7-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL7-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL7-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL8-1	28/10/2016	11	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	28/10/2016	11	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	28/10/2016	11	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL9-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL9-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL10-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL10-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL10-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL11-1	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL11-2	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL11-3	28/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL12-1	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL12-2	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL12-3	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL13-1	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL13-2	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL13-3	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL14-1	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL14-2	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SWL14-3	28/10/2016	11	-	-	-	-	-	-	-	-	No Access
SW15-1	26/10/2016	11	50	30	4.79	145	0.31	7.47	78.6	17.7	
SW15-2	26/10/2016	11	50	30	4.27	197	0.31	7.01	75.9	19.2	
SWL16-1	26/10/2016	11	25	45	6.08	12	0.57	2.11	21.1	15.4	
SWL16-2	26/10/2016	11	25	45	6.37	12	0.39	4.71	48.8	17.1	
SWL16-3	26/10/2016	11	25	45	6.09	35	0.42	9.24	99.6	18.9	
SWL17-1	25/10/2016	11	25	15	4.06	211	0.30	5.69	57.0	15.5	
SWL17-2	25/10/2016	11	25	15	3.98	228	0.29	6.92	68.8	15.1	
SWL17-3	25/10/2016	11	-	-	-	-	-	-	-	-	Dry
SWL20-1	24/10/2016	11	15	45	6.31	122	3.44	6.33	66.1	16.8	
SWL20-3	24/10/2016	11	15	45	6.19	156	3.38	6.42	67.9	17.4	
SWL20-2	24/10/2016	11	15	45	6.26	141	3.47	5.79	61.1	17.2	

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ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	22/11/2016	12	10	105	6.19	8	0.41	0.74	8.0	18.9	
SWL1-2	22/11/2016	12	10	105	6.07	-82	0.41	1.27	13.9	19.9	
SWL1-3	22/11/2016	12	10	105	5.97	45	0.38	0.41	4.4	19.1	
SWL2-1	22/11/2016	12	16	150	6.82	139	0.35	8.97	103.4	22.5	
SWL2-2	22/11/2016	12	15	150	6.11	159	0.36	8.93	100.5	21.3	
SWL2-3	22/11/2016	12	15	150	6.46	151	0.36	8.91	100.6	21.5	
SWL3-1	22/11/2016	12	30	120	6.65	69	0.33	9.08	102.6	21.5	
SWL3-2	22/11/2016	12	30	120	6.97	76	0.33	9.42	108.9	22.7	
SWL3-3	22/11/2016	12	30	120	6.84	70	0.32	9.18	105.4	22.3	
SWL4-1	22/11/2016	12	25	60	6.36	-22	0.65	6.34	72.0	21.6	
SWL4-2	22/11/2016	12	10	45	6.00	-24	0.66	6.91	81.6	23.6	
SWL4-3	22/11/2016	12	10	45	5.86	45	0.62	5.61	62.2	20.4	
SWL5-1	22/11/2016	12	50	105	4.94	203	0.16	5.93	67.8	21.9	
SWL5-2	22/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL5-3	22/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL6-1	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL6-2	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL6-3	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL7-1	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL7-3	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL7-2	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	12	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	12	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	12	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL9-2	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL9-3	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL10-1	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL10-2	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL10-3	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL11-1	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL11-2	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL11-3	25/11/2016	12	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	12	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	12	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	12	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	12	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	12	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	12	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	12	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	12	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	12	-	-	-	-	-	-	-	-	No Access
SW15-1	24/11/2016	12	40	30	4.54	87	0.29	1.36	14.7	19.3	
SW15-2	24/11/2016	12	40	30	4.98	41	0.29	1.74	18.9	19.4	
SWL16-1	24/11/2016	12	50	105	6.21	-48	0.57	2.26	23.8	17.7	
SWL16-2	24/11/2016	12	50	105	6.07	-156	0.40	0.85	9.0	18.2	
SWL16-3	24/11/2016	12	50	105	6.41	-41	0.47	1.08	11.7	19.0	
SWL17-1	29/11/2016	12	75	15	4.06	29	0.23	0.96	10.1	17.6	
SWL17-2	29/11/2016	12	75	15	4.15	-6	0.25	0.00	0.0	17.2	
SWL17-3	29/11/2016	12	75	15	3.98	34	0.26	0.73	7.7	17.6	
SWL20-1	23/11/2016	12	30	60	6.56	150	3.65	7.41	80.3	18.7	
SWL20-3	23/11/2016	12	30	60	6.58	119	3.59	7.35	80.6	19.2	
SWL20-2	23/11/2016	12	30	60	6.59	134	3.66	7.72	84.4	19.1	

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December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	13/12/2016	13	25	135	6.61	16	0.40	7.51	84.8	21.5	
SWL1-2	13/12/2016	13	25	135	6.64	-119	0.50	0.19	2.1	20.3	
SWL1-3	13/12/2016	13	25	135	6.76	-44	0.38	0.46	5.2	21.5	
SWL2-1	13/12/2016	13	15	135	7.32	37	0.41	8.72	101.6	23.2	
SWL2-2	13/12/2016	13	15	135	7.38	41	0.39	9.01	104.3	22.9	
SWL2-3	13/12/2016	13	15	135	7.42	43	0.41	8.75	102.3	23.4	
SWL3-1	13/12/2016	13	20	120	6.84	-5	0.40	8.92	105.1	23.8	
SWL3-2	13/12/2016	13	20	120	6.98	3	0.39	8.85	105.1	24.2	
SWL3-3	13/12/2016	13	20	120	7.06	36	0.39	8.58	102.3	24.4	
SWL4-1	13/12/2016	13	20	75	5.95	43	0.63	2.88	32.9	22.1	
SWL4-2	13/12/2016	13	20	75	6.12	-21	0.56	6.81	79.6	23.2	
SWL4-3	13/12/2016	13	20	75	5.93	26	0.49	5.50	61.1	20.6	
SWL5-1	13/12/2016	13	20	30	6.34	60	0.19	6.72	78.9	23.6	
SWL5-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL5-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL6-1	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL6-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL6-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL7-1	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL7-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL7-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	13	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	13	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	13	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL9-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL9-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL10-1	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL10-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL10-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL11-1	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL11-2	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL11-3	16/12/2016	13	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	13	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	13	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	13	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	13	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	13	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	13	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	13	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	13	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	13	-	-	-	-	-	-	-	-	No Access
SW15-1	15/12/2016	13	25	45	4.77	115	0.35	0.51	5.5	19.0	
SW15-2	15/12/2016	13	25	45	5.24	97	0.38	0.83	9.0	19.2	
SWL16-1	15/12/2016	13	35	30	6.09	-83	0.67	1.38	14.6	17.9	
SWL16-2	15/12/2016	13	35	30	5.95	-159	0.41	0.34	3.7	19.1	
SWL16-3	15/12/2016	13	35	30	6.00	-128	0.43	1.77	20.1	21.0	
SWL17-1	15/12/2016	13	50	5	4.11	114	0.27	0.72	7.8	18.7	
SWL17-2	15/12/2016	13	50	5	4.28	19	0.27	0.18	1.9	17.8	
SWL17-3	15/12/2016	13	50	5	4.11	99	0.28	1.33	14.3	18.5	
SWL20-1	14/12/2016	13	15	90	6.13	-16	4.77	3.24	37.2	21.5	
SWL20-3	14/12/2016	13	15	90	6.36	24	4.94	2.83	31.9	20.5	
SWL20-2	14/12/2016	13	15	90	6.31	11	4.96	2.76	31.5	21.2	

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- : Sample not analysed

Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	17/01/2017	14	25	165	6.39	-59.7	0.46	3.03	33.9	20.7	
SWL1-2	17/01/2017	14	25	165	6.47	-131.1	0.51	0.04	0.5	19.4	
SWL1-3	17/01/2017	14	25	165	6.19	-26.3	0.53	0.07	0.7	19.6	
SWL2-1	17/01/2017	14	15	125	6.86	178.4	0.39	8.23	97.9	24.0	
SWL2-2	17/01/2017	14	15	125	7.02	240.2	0.38	8.28	97.2	23.2	
SWL2-3	17/01/2017	14	15	125	7.09	243.4	0.39	8	94.8	23.7	
SWL3-1	17/01/2017	14	25	75	6.93	-22.1	0.39	7.76	91.6	23.6	
SWL3-2	17/01/2017	14	25	75	7.2	11.2	0.39	7.82	92.9	23.8	
SWL3-3	17/01/2017	14	25	75	7.23	-19.6	0.39	7.69	91.2	23.8	
SWL4-1	17/01/2017	14	25	90	6.18	67.4	0.70	5.99	70.1	22.9	
SWL4-2	17/01/2017	14	15	90	6.22	6.5	0.70	3.35	40.2	24.3	
SWL4-3	17/01/2017	14	15	90	6.21	-5.6	0.78	0.28	3.3	22.8	
SWL5-1	24/01/2017	14	15	12	6.39	60.5	0.27	7.57	83	20.0	
SWL5-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL5-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL6-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL6-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL6-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL7-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL7-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL7-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	14	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	14	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	14	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL9-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL9-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL10-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL10-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL10-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL11-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL11-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL11-3	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	14	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	14	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	14	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	14	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	14	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	14	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	14	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	14	-	-	-	-	-	-	-	-	No Access
SWL14-3	20/01/2017	14	-	-	-	-	-	-	-	-	No Access
SW15-1	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SW15-2	20/01/2017	14	-	-	-	-	-	-	-	-	Dry
SWL16-1	19/01/2017	14	25	65	6.45	-42.6	0.6181	1.28	13.7	18.4	
SWL16-2	19/01/2017	14	25	65	6.52	-51.3	0.2876	1.41	15.5	19.7	
SWL16-3	19/01/2017	14	25	65	5.96	-55.7	0.3147	2.74	30.8	20.8	
SWL17-1	19/01/2017	14	30	25	4.25	-7	0.2374	0.1	1.1	17.8	
SWL17-2	19/01/2017	14	25	30	4	77.7	0.2179	0.17	1.8	18.6	
SWL17-3	19/01/2017	14	30	25	4.2	24.5	0.2367	0.13	1.4	18.3	
SWL20-1	18/01/2017	14	25	150	6.46	-82	6.86	3.86	45.7	22.0	
SWL20-3	18/01/2017	14	25	150	6.77	-102	6.63	-0.12	-1.3	20.2	
SWL20-2	18/01/2017	14	25	150	6.88	-252	6.27	-0.13	-1.5	20.6	

Notes:
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Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	15/02/2017	15	25	45	6.16	139.5	0.26	0.99	11.7	23.7	
SWL1-2	15/02/2017	15	25	45	6.15	138.4	0.24	1.96	23.6	24.6	
SWL1-3	15/02/2017	15	25	45	6.05	153.5	0.16	2.65	32.4	25.5	
SWL2-1	15/02/2017	15	25	60	7.04	129.2	0.41	8.18	106	28.7	
SWL2-2	15/02/2017	15	25	60	7.31	129.1	0.41	8.01	103.1	28.3	
SWL2-3	15/02/2017	15	25	60	7.08	-6.8	0.40	8.03	104.2	28.8	
SWL3-1	15/02/2017	15	25	60	7.02	85.3	0.41	8.03	101	27.2	
SWL3-2	15/02/2017	15	25	60	7.12	84	0.40	7.85	99.6	27.5	
SWL3-3	15/02/2017	15	25	60	7.17	66.5	0.36	8.02	101.9	27.6	
SWL4-1	15/02/2017	15	50	70	5.9	87.1	0.65	1.81	21.7	24.2	
SWL4-2	15/02/2017	15	50	70	5.94	99.3	0.67	1.29	16	26.0	
SWL4-3	15/02/2017	15	50	70	5.95	-35.8	0.66	1.4	17.2	25.4	
SWL5-1	15/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL5-2	15/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL5-3	15/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL6-1	20/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL6-2	20/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL6-3	20/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL7-1	20/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL7-3	20/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL7-2	-	15	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	15	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	15	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	15	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL9-2	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL9-3	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL10-1	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL10-2	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL10-3	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL11-1	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL11-2	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL11-3	17/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	15	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	15	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	15	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	15	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	15	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	15	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	15	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	15	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	15	-	-	-	-	-	-	-	-	No Access
SW15-1	16/02/2017	15	50	45	5.81	76	0.41	6.82	85.9	26.8	
SW15-2	16/02/2017	15	50	45	4.98	124.3	0.40	4.06	51.2	26.9	
SWL16-1	16/02/2017	15	50	90	6.02	-52.1	0.60	2.55	29.7	22.7	
SWL16-2	16/02/2017	15	50	90	6.26	-43	0.50	2.12	25.3	23.8	
SWL16-3	16/02/2017	15	50	90	6.28	-40.4	0.50	0.14	1.7	23.6	
SWL17-1	21/02/2017	15	30	15	4.23	24.5	0.31	0.88	9.4	18.5	
SWL17-2	21/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL17-3	21/02/2017	15	-	-	-	-	-	-	-	-	Dry
SWL20-1	21/02/2017	15	25	180	5.67	54	3.18	1.12	13.1	22.5	
SWL20-3	21/02/2017	15	25	180	6.22	9	4.35	0.03	0.3	20.7	
SWL20-2	21/02/2017	15	25	180	6.03	31	3.77	0.59	6.9	21.8	

Notes:
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Table 2
Surface Water Field Results
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	20/03/2017	16	25	45	6.35	93.7	0.39	3.49	37.2	18.5	
SWL1-2	20/03/2017	16	25	45	6.36	85.4	0.39	3.45	35.6	17.0	
SWL1-3	20/03/2017	16	25	45	6.22	-49.1	0.33	0.82	8.6	17.7	
SWL2-1	20/03/2017	16	25	60	6.53	55.7	0.36	8.88	100.5	21.5	
SWL2-2	20/03/2017	16	25	60	6.64	-68	0.37	8.7	98	21.2	
SWL2-3	20/03/2017	16	25	60	6.73	-18.9	0.36	8.83	99.8	21.4	
SWL3-1	20/03/2017	16	25	60	6.78	25	0.35	8.71	98.7	21.4	
SWL3-2	20/03/2017	16	25	60	6.92	31.4	0.37	8.78	98.7	21.0	
SWL3-3	20/03/2017	16	25	60	6.98	38.1	0.37	8.74	98	20.9	
SWL4-1	13/03/2017	16	50	70	5.84	15.3	0.24	0.5	6	23.4	
SWL4-2	13/03/2017	16	50	70	6.21	-49.7	0.19	0.29	3.5	23.1	
SWL4-3	13/03/2017	16	50	70	6.37	-35.3	0.20	2.79	32.4	22.3	
SWL5-1	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL5-2	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL5-3	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL6-1	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL6-2	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL6-3	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL7-1	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL7-3	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL7-2	17/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	16	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	16	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	16	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL9-2	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL9-3	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL10-1	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL10-2	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL10-3	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL11-1	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL11-2	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL11-3	16/03/2017	16	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	16	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	16	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	16	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	16	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	16	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	16	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	16	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	16	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	16	-	-	-	-	-	-	-	-	No Access
SW15-1	15/03/2017	16	25	15	4.75	91.5	0.32	3.85	43.5	21.4	
SW15-2	15/03/2017	16	25	15	6.37	94.9	0.33	5.49	62.2	21.6	
SWL16-1	15/03/2017	16	50	150	6.03	-29	0.34	4.27	45.5	18.4	
SWL16-2	15/03/2017	16	50	150	5.82	-88.1	0.37	3.18	35.1	20.2	
SWL16-3	15/03/2017	16	50	150	5.7	-161.1	0.34	0.28	3.1	20.4	
SWL17-1	16/03/2017	16	30	15	4.29	26.7	0.26	2.48	25.9	17.5	
SWL17-2	-	16	-	-	-	-	-	-	-	-	Dry
SWL17-3	-	16	-	-	-	-	-	-	-	-	Dry
SWL20-1	14/03/2017	16	25	90	5.89	109	3.57	4.12	46.3	20.1	
SWL20-2	14/03/2017	16	25	90	6.09	82	3.83	4.17	46.5	19.7	
SWL20-3	14/03/2017	16	25	90	6.22	86	3.79	4.71	52.4	19.7	

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Surface Water Field Results
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ENAUPERT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL1-1	11/04/2017	17	70	175	6.3	144.2	0.45	3.04	32.5	18.5	
SWL1-2	11/04/2017	17	70	175	6.47	-59.1	0.46	0.91	9.4	16.6	
SWL1-3	11/04/2017	17	50	170	6.53	67.9	0.40	2.4	24.8	16.8	
SWL2-1	11/04/2017	17	50	90	6.95	5.8	0.41	8.98	98.6	19.9	
SWL2-2	11/04/2017	17	50	95	7.01	10.6	0.41	8.89	97.4	19.9	
SWL2-3	11/04/2017	17	50	90	6.99	15.7	0.41	9.18	100.6	19.8	
SWL3-1	11/04/2017	17	65	105	6.88	-37.1	0.41	8.5	95.2	20.9	
SWL3-2	11/04/2017	17	65	110	6.92	-47.3	0.40	8.41	93.6	20.6	
SWL3-3	11/04/2017	17	65	105	6.95	-38.8	0.41	8.37	92.5	20.2	
SWL4-1	11/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL4-2	11/04/2017	17	45	60	6.21	-78.2	0.68	1.21	13.4	20.3	
SWL4-3	11/04/2017	17	45	60	6.25	-44.3	0.67	0.67	7.7	22.4	
SWL5-1	11/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL5-2	11/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL5-3	11/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL6-1	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL6-2	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL6-3	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL7-1	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL7-3	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL7-2	13/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL8-1	-	17	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-2	-	17	-	-	-	-	-	-	-	-	No Access - track blocked
SWL8-3	-	17	-	-	-	-	-	-	-	-	No Access - track blocked
SWL9-1	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL9-2	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL9-3	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL10-1	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL10-2	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL10-3	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL11-1	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL11-2	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL11-3	12/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL12-1	-	17	-	-	-	-	-	-	-	-	No Access
SWL12-2	-	17	-	-	-	-	-	-	-	-	No Access
SWL12-3	-	17	-	-	-	-	-	-	-	-	No Access
SWL13-1	-	17	-	-	-	-	-	-	-	-	No Access
SWL13-2	-	17	-	-	-	-	-	-	-	-	No Access
SWL13-3	-	17	-	-	-	-	-	-	-	-	No Access
SWL14-1	-	17	-	-	-	-	-	-	-	-	No Access
SWL14-2	-	17	-	-	-	-	-	-	-	-	No Access
SWL14-3	-	17	-	-	-	-	-	-	-	-	No Access
SW15-1	18/04/2017	17	50	30	5.19	107.1	0.33	1.18	11.7	14.9	
SW15-2	18/04/2017	17	50	30	5.24	127.5	0.33	1.22	12.1	14.9	
SWL16-1	18/04/2017	17	50	60	6.23	-68.6	0.31	0.09	0.9	19.8	
SWL16-2	18/04/2017	17	50	60	6.25	-138.8	0.38	0.77	8.1	17.2	
SWL16-3	18/04/2017	17	50	60	6.22	-21.6	0.72	3.22	33.2	16.4	
SWL17-1	18/04/2017	17	75	30	5.13	-19.7	0.28	0.19	2	17.2	
SWL17-2	18/04/2017	17	75	30	4.73	45	0.27	1.75	18.1	16.6	
SWL17-3	18/04/2017	17	75	30	4.87	50.3	0.29	0.1	1	16.4	
SWL20-1	10/04/2017	17	50	210	6.12	89.5	4.23	5.76	60.1	16.8	
SWL20-2	10/04/2017	17	50	210	6.29	87.9	4.46	4.76	49.4	16.5	
SWL20-3	10/04/2017	17	50	210	6.34	89.8	4.47	4.75	49.2	16.4	

Notes:
SWL= Surface water location
ID = identification
mg/L: milligrams per litre
mS/cm = milliSiemen per centimetre
mV = millivolts
°C = degrees Celsius
- : Sample not analysed

Table 3
Groundwater Analytical Results
Total and Dissolved Metals
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
			LOR	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.05	0.001	0.001	0.001	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.001	0.001	0.001	0.001	0.001	
			1. ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
			2. DER 2015	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW1	19/07/2016	8		2.7	<0.001	<0.00005	0.004	0.002	0.4	0.003	<0.005	<0.0001	<0.001	<0.001	<0.005	0.14	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	0.001
MW2	19/07/2016	8		1.9	<0.001	<0.00005	0.003	0.003	0.33	0.001	0.016	<0.0001	<0.001	<0.001	0.008	0.06	<0.001	<0.00005	<0.001	0.001	0.07	<0.001	0.015	<0.0001	<0.001	<0.001	0.004
MW3	19/07/2016	8		0.94	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	0.65	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW4	19/07/2016	8		0.12	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002	
MW5	18/07/2016	8		5	<0.001	<0.00005	0.004	0.006	0.44	0.002	<0.005	<0.0001	0.002	<0.001	0.012	2	<0.001	<0.00005	<0.001	0.004	0.29	<0.001	<0.005	<0.0001	0.001	<0.001	0.01
MW6	18/07/2016	8		1.9	<0.001	<0.00005	0.002	0.001	0.28	0.001	<0.005	<0.0001	<0.001	<0.001	0.007	0.43	<0.001	<0.00005	<0.001	0.001	0.15	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006
MW10	18/07/2016	8		24	0.006	<0.00005	0.034	0.008	24	0.018	0.011	0.0003	0.007	0.003	0.032	0.42	<0.001	<0.00005	<0.001	0.002	1.7	<0.001	0.007	<0.0001	0.001	<0.001	0.009
MW11	15/07/2016	8		8.2	0.002	<0.00005	0.004	0.001	6.6	0.009	<0.005	<0.0001	0.007	<0.001	<0.005	6.1	<0.001	<0.00005	<0.001	<0.001	2.3	0.005	<0.005	<0.0001	0.006	<0.001	0.003
MW12	15/07/2016	8		5.5	0.003	<0.00005	0.001	<0.001	4.9	<0.001	<0.005	<0.0001	0.006	<0.001	<0.005	5.5	<0.001	<0.00005	<0.001	<0.001	1.7	<0.001	<0.005	<0.0001	0.006	<0.001	0.002
MW26	19/07/2016	8		1.4	<0.001	<0.00005	0.004	0.004	0.32	0.001	<0.005	<0.0001	<0.001	<0.001	0.009	0.44	<0.001	<0.00005	<0.001	<0.001	0.08	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006
MW27	19/07/2016	8		0.91	<0.001	<0.00005	0.002	0.002	1.3	<0.001	0.005	<0.0001	0.002	<0.001	0.007	0.74	<0.001	<0.00005	<0.001	0.001	0.98	<0.001	0.005	<0.0001	0.002	<0.001	0.006
MW28	19/07/2016	8		1	<0.001	<0.00005	0.005	0.004	0.31	0.001	<0.005	<0.0001	<0.001	0.003	<0.005	0.5	<0.001	<0.00005	<0.001	0.001	0.13	<0.001	<0.005	<0.0001	<0.001	0.001	0.002
MW29	14/07/2016	8		2.9	<0.001	<0.00005	0.005	0.005	0.56	0.002	<0.005	<0.0001	<0.001	0.002	0.006	1.4	<0.001	<0.00005	<0.001	<0.001	0.33	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002
MW30	14/07/2016	8		0.94	<0.001	<0.00005	0.003	0.001	0.09	0.001	<0.005	<0.0001	<0.001	<0.001	0.006	0.46	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.004
MW31	14/07/2016	8		10	0.001	0.00005	0.008	0.004	0.39	0.001	<0.005	<0.0001	0.002	0.001	<0.005	2.2	<0.001	<0.00005	<0.001	0.003	0.24	<0.001	<0.005	<0.0001	0.001	<0.001	0.002
MW32	14/07/2016	8		1.5	<0.001	<0.00005	0.004	0.002	0.52	0.001	<0.005	<0.0001	0.002	<0.001	<0.005	1.2	<0.001	<0.00005	0.001	<0.001	0.38	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW36	14/07/2016	8		0.23	<0.001	<0.00005	<0.001	0.001	0.16	0.002	<0.005	<0.0001	<0.001	<0.001	0.006	0.1	<0.001	<0.00005	<0.001	0.001	0.07	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW37	14/07/2016	8		0.3	<0.001	<0.00005	<0.001	0.001	0.08	<0.001	<0.005	0.0002	<0.001	<0.001	<0.005	0.21	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW38	14/07/2016	8		2.6	0.005	0.00009	0.004	0.002	5.7	0.002	0.02	<0.0001	0.007	0.002	0.28	1.4	0.003	<0.00005	0.002	<0.001	4.7	<0.001	0.019	<0.0001	0.006	0.001	0.01
MW39	14/07/2016	8		0.25	<0.001	0.00005	<0.001	<0.001	1	<0.001	0.019	<0.0001	<0.001	<0.001	0.006	0.16	<0.001	<0.00005	<0.001	<0.001	0.84	<0.001	0.019	<0.0001	<0.001	<0.001	0.001
MW40	13/07/2016	8		1.6	<0.001	<0.00005	<0.001	<0.001	0.47	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	1.4	<0.001	<0.00005	<0.001	<0.001	0.39	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
MW41	13/07/2016	8		2.3	<0.001	0.00026	0.002	0.008	0.75	0.001	0.007	0.0001	0.002	0.002	0.015	1.9	<0.001	0.00026	<0.001	0.005	0.47	<0.001	0.006	<0.0001	<0.001	<0.001	0.15
MW42	13/07/2016	8		0.52	<0.001	<0.00005	0.001	<0.001	0.2	0.002	<0.005	<0.0001	<0.001	<0.001	<0.005	0.27	<0.001	<0.00005	<0.001	<0.001	0.18	<0.001	<0.005	<0.0001	<0.001	<0.001	0.001
MW50	12/07/2016	8		21	0.007	0.00011	0.053	0.017	6.7	0.13	0.017	0.0007	0.004	0.006	0.025	<0.05	<0.001	<0.00005	<0.001	<0.001	1.2	<0.001	0.016	<0.0001	0.002	<0.001	0.007
MW51	12/07/2016	8		0.65	0.002	<0.00005	0.003	0.005	14	0.001	<0.005	<0.0001	0.001	<0.001	0.01	0.12	<0.001	<0.00005	<0.001	0.003	0.73	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009
MW52	12/07/2016	8		23	0.017	0.0014	0.019	0.048	18	0.022	0.1	0.0002	0.019	0.016	0.75	0.28	0.002	0.0014	<0.001	0.02	0.85	<0.001	0.095	<0.0001	0.01	0.012	0.54
MW55	19/07/2016	8		0.37	<0.001	<0.00005	0.004	0.001	0.44	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.25	<0.001	<0.00005	0.001	0.001	0.14	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW1	25/08/2016	9		2.6	<0.001	<0.00005	0.003	0.002	0.48	0.004	<0.005	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002
MW2	24/08/2016	9		1.2	<0.001	<0.00005	0.002	0.001	0.24	<0.001	0.005	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	0.005	<0.0001	<0.001	<0.001	0.002
MW3	24/08/2016	9		0.87	<0.001	<0.00005	<0.001	<0.001	0.06	0.001	<0.005	<0.0001	<0.001	<0.001	0.006	0.75	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW4	24/08/2016	9		0.2	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW5	24/08/2016	9		2	0.001	<0.00005	0.004	0.008	0.23	0.003	<0.005	<0.0001	0.003	<0.001	0.009	1.1	0.001	<0.00005	<0.001	0.006	0.19	<0.001	<0.005	<0.0001	0.001	<0.001	0.008
MW6	24/08/2016	9		4.3	<0.001	<0.00005	0.004	0.002	0.43	0.002	<0.005	<0.0001	0.002	<0.001	0.009	0.55	<0.001	<0.00005	<0.001	<0.00							

Table 3
Groundwater Analytical Results
Total and Dissolved Metals
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.05	0.001	0.001	0.001	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	
1. ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW1	29/09/2016	10		2.6	<0.001	<0.00005	0.004	0.003	0.79	0.006	<0.005	<0.0001	<0.001	<0.001	0.011	0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW2	4/10/2016	10		4.1	<0.001	<0.00005	0.004	0.003	0.54	0.003	<0.005	<0.0001	0.001	<0.001	0.013	0.08	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW3	22/09/2016	10		2.4	<0.001	<0.00005	0.003	<0.001	0.22	0.001	<0.005	<0.0001	<0.001	<0.001	0.009	0.72	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW4	4/10/2016	10		0.13	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.033	0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.029
MW5	29/09/2016	10		0.59	<0.001	<0.00005	<0.001	0.002	0.4	<0.001	0.006	<0.0001	<0.001	<0.001	<0.005	0.45	<0.001	<0.00005	0.003	0.001	0.36	<0.001	0.006	<0.0001	0.002	<0.001	<0.005
MW6	29/09/2016	10		7.9	0.002	<0.00005	0.005	0.007	0.83	0.003	<0.005	<0.0001	0.002	<0.001	0.012	0.88	<0.001	<0.00005	<0.001	0.004	0.1	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005
MW10	22/09/2016	10		4.4	0.002	<0.00005	0.01	0.004	4.3	0.005	<0.005	<0.0001	0.002	0.002	0.01	0.17	<0.001	<0.00005	<0.001	0.002	0.25	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW11	23/09/2016	10		4.6	<0.001	<0.00005	0.002	<0.001	1.6	0.003	<0.005	<0.0001	0.002	<0.001	<0.005	3.9	<0.001	<0.00005	<0.001	<0.001	0.23	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
MW12	23/09/2016	10		2.8	0.002	<0.00005	0.002	<0.001	6	<0.001	<0.005	<0.0001	0.002	0.005	<0.005	2.3	<0.001	<0.00005	<0.001	<0.001	0.29	<0.001	<0.005	<0.0001	0.002	0.005	<0.005
MW26	29/09/2016	10		3.7	<0.001	<0.00005	0.005	0.006	0.82	0.002	<0.005	<0.0001	0.002	0.002	0.007	2	<0.001	<0.00005	0.002	0.002	0.31	<0.001	<0.005	<0.0001	0.001	0.001	0.006
MW27	29/09/2016	10		0.77	<0.001	<0.00005	<0.001	<0.001	0.3	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.72	<0.001	<0.00005	<0.001	<0.001	0.19	<0.001	<0.005	<0.0001	<0.001	<0.001	0.031
MW29	27/09/2016	10		2	<0.001	<0.00005	0.003	<0.001	0.27	<0.001	<0.005	<0.0001	<0.001	0.002	<0.005	1.7	<0.001	<0.00005	0.002	<0.001	0.2	<0.001	<0.005	<0.0001	<0.001	0.002	<0.005
MW30	27/09/2016	10		0.51	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.41	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002
MW31	27/09/2016	10		2.8	<0.001	<0.00005	0.003	<0.001	0.77	<0.001	<0.005	<0.0001	0.003	0.002	<0.005	2.5	<0.001	<0.00005	0.002	<0.001	0.63	<0.001	<0.005	<0.0001	0.003	0.002	<0.005
MW32	27/09/2016	10		0.69	<0.001	<0.00005	0.002	<0.001	0.26	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.65	<0.001	<0.00005	0.001	<0.001	0.19	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW36	27/09/2016	10		0.1	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.06	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW37	27/09/2016	10		0.26	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.24	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW38	27/09/2016	10		1.8	0.003	<0.00005	0.003	0.001	1.5	0.002	<0.005	<0.0001	0.002	0.001	0.24	0.43	0.002	<0.00005	0.001	<0.001	0.55	<0.001	<0.005	<0.0001	0.002	<0.001	0.071
MW39	27/09/2016	10		0.24	<0.001	<0.00005	<0.001	<0.001	0.72	<0.001	0.012	<0.0001	<0.001	0.001	<0.005	0.24	<0.001	<0.00005	<0.001	<0.001	0.6	<0.001	0.012	<0.0001	<0.001	0.001	<0.005
MW40	28/09/2016	10		1.6	<0.001	<0.00005	<0.001	<0.001	0.38	0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	1.4	<0.001	<0.00005	<0.001	<0.001	0.35	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW41	28/09/2016	10		1.7	<0.001	0.00016	0.002	0.007	0.95	0.001	0.006	0.0001	0.001	0.002	0.039	1.4	<0.001	0.00012	0.001	0.005	0.69	<0.001	0.005	<0.0001	0.001	<0.001	0.034
MW42	28/09/2016	10		0.67	<0.001	<0.00005	0.001	0.001	0.18	0.003	<0.005	<0.0001	<0.001	<0.001	<0.005	1	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW50	28/09/2016	10		4.3	0.004	0.00007	0.015	0.007	6.1	0.046	0.018	0.0003	0.003	0.003	<0.005	<0.05	<0.001	0.00005	<0.001	<0.001	<0.05	<0.001	0.016	<0.0001	0.002	<0.001	<0.005
MW51	28/09/2016	10		0.34	0.003	0.00005	0.002	0.006	13	0.001	<0.005	<0.0001	0.001	0.004	<0.005	0.05	<0.001	<0.00005	<0.001	<0.001	0.14	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW52	20/09/2016	10		2.1	0.007	0.001	<0.005	0.19	8.5	<0.005	0.19	<0.0005	0.023	0.007	2.1	0.4	<0.005	0.001	<0.005	0.11	4.4	<0.005	0.18	<0.0005	0.019	<0.005	1.9
MW55	22/09/2016	10		1.7	<0.001	<0.00005	0.005	0.002	1.2	0.003	<0.005	<0.0001	0.001	0.001	0.008	0.28	<0.001	<0.00005	<0.001	<0.001	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002
MW1	24/10/2016	11		0.64	<0.001	<0.00005	0.001	0.002	0.12	<0.001	<0.005	<0.0001	<0.001	0.004	0.01	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.01
MW2	1/11/2016	11		0.32	<0.001	0.00008	<0.001	0.001	0.09	<0.001	<0.005	<0.0001	<0.001	0.003	0.017	0.12	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.003	<0.005
MW3	1/11/2016	11		0.92	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.001	0.006	0.81	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.001	<0.005
MW4	31/10/2016	11		0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW5	24/10/2016	11		0.43	<0.001	<0.00005	<0.001	0.003	0.46	<0.001	<0.005	<0.0001	<0.001	0.001	<0.005	0.4	<0.001	<0.00005	<0.001	0.003	0.38	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW6	24/10/2016	11		3.7	<0.001	<0.00005	0.002	0.004	0.44	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005	0.76	<0.001	<0.00005	<0.001	0.003	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW10	31/10/2016	11		0.44	<0.001	<0.00005	0.002	0.003	0.46	0.001	<0.005	<0.0001	0.001	<0.001	0.007	0.26	<0.001	<0.00005	0.001	0.003	0.22	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005
MW11	31/10/2016	11		6.7	<0.001	<0.00005	0.001	<0.001	0.6	0.004	<0.005	<0.0001	0.004	<0.001	<0.005	7	<0.001	<0.00005	0.001	<0.001	0.33	0.004	<0.005	<0.0001	0.004	<0.001	<0.005
MW12	31/10/2016	11		2.6	<0.001	<0.00005	<0.001	<0.001	0.46	<0.001	<0.005	<0.0001	0.003	0.004	<0.005	2.7	<0.001	<0.00005	<0.001	<0.001	0.22	<0.001	<0.005	<0.0001	0.003	0.003	<0.005
MW26	28/10/2016	11		1.5	<0.001	<0.00005	0.002	0.001	1	<0.001	<0.005	<0.0001	<0.001	0.002	<												

Table 3
Groundwater Analytical Results
Total and Dissolved Metals
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.05	0.001	0.001	0.001	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.001	0.001	0.001	0.001	0.001	
1. ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW1	17/01/2017	14		0.45	<0.001	<0.00005	0.001	0.002	0.06	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW2	17/01/2017	14		0.76	<0.001	<0.00005	0.002	0.001	0.54	<0.001	0.015	<0.0001	<0.001	<0.001	0.038	0.13	<0.001	<0.00005	0.001	<0.001	0.14	<0.001	0.011	<0.0001	<0.001	<0.001	<0.005
MW3	17/01/2017	14		0.15	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW4	17/01/2017	14		0.14	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.01	0.12	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW5	17/01/2017	14		0.89	<0.001	<0.00005	<0.001	<0.001	0.37	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.83	<0.001	<0.00005	<0.001	<0.001	0.33	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW6	17/01/2017	14		2.2	<0.001	<0.00005	<0.001	<0.001	0.29	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	1.7	<0.001	<0.00005	<0.001	<0.001	0.14	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW10	24/01/2017	14		0.12	<0.001	<0.00005	0.001	<0.001	0.84	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.08	<0.001	<0.00005	0.001	<0.001	0.53	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW11	24/01/2017	14		5.1	<0.001	<0.00005	0.001	<0.001	0.62	0.002	<0.005	<0.0001	0.003	<0.001	<0.005	5.1	<0.001	<0.00005	<0.001	<0.001	0.2	<0.001	<0.005	<0.0001	0.003	<0.001	<0.005
MW12	24/01/2017	14		2.7	<0.001	<0.00005	<0.001	<0.001	0.6	<0.001	<0.005	<0.0001	0.002	0.003	<0.005	2.6	<0.001	<0.00005	<0.001	<0.001	0.16	<0.001	<0.005	<0.0001	0.002	0.002	<0.005
MW26	20/01/2017	14		2.4	<0.001	<0.00005	0.004	0.001	0.31	0.002	<0.005	<0.0001	0.001	0.002	<0.005	2.1	<0.001	<0.00005	0.003	<0.001	0.26	<0.001	<0.005	<0.0001	<0.001	0.001	<0.005
MW27	20/01/2017	14		0.79	<0.001	<0.00005	0.002	<0.001	0.73	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.63	<0.001	<0.00005	0.002	<0.001	0.6	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006
MW29	23/01/2017	14		1.2	<0.001	<0.00005	0.002	0.002	0.2	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	1.1	<0.001	<0.00005	0.002	0.002	0.17	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW30	23/01/2017	14		0.33	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.008	0.31	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW31	23/01/2017	14		1.1	<0.001	<0.00005	0.002	<0.001	0.34	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	1	<0.001	<0.00005	0.002	<0.001	0.31	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW32	23/01/2017	14		0.34	<0.001	<0.00005	0.001	<0.001	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	0.3	<0.001	<0.00005	<0.001	<0.001	0.13	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005
MW36	19/01/2017	14		<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW37	19/01/2017	14		0.15	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.12	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW38	19/01/2017	14		0.51	0.001	<0.00005	0.001	<0.001	0.44	<0.001	<0.005	<0.0001	0.002	<0.001	0.07	0.27	0.002	<0.00005	<0.001	<0.001	0.23	<0.001	<0.005	<0.0001	0.002	<0.001	0.047
MW39	19/01/2017	14		<0.05	<0.001	<0.00005	<0.001	<0.001	0.44	<0.001	0.007	<0.0001	<0.001	<0.001	<0.005	0.05	<0.001	<0.00005	<0.001	<0.001	0.24	<0.001	0.006	<0.0001	<0.001	<0.001	<0.005
MW40	19/01/2017	14		1.2	<0.001	<0.00005	<0.001	<0.001	0.29	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	1.1	<0.001	<0.00005	<0.001	<0.001	0.25	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW41	19/01/2017	14		1.9	<0.001	0.00013	0.002	0.007	0.64	<0.001	<0.005	0.0001	0.002	0.002	0.01	2	<0.001	0.00013	0.002	0.007	0.6	<0.001	<0.005	0.0001	0.002	0.002	<0.005
MW42	19/01/2017	14		0.32	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	0.24	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW50	18/01/2017	14		1.6	0.002	<0.00005	0.006	<0.001	2.5	0.011	0.015	<0.0001	0.002	0.002	<0.005	<0.05	<0.001	0.00008	<0.001	<0.001	<0.05	<0.001	0.015	<0.0001	0.001	<0.001	<0.005
MW51	18/01/2017	14		0.4	<0.001	<0.00005	0.004	<0.001	5.6	<0.001	0.01	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.01	<0.0001	0.002	<0.001	<0.005
MW52	18/01/2017	14		0.16	0.006	0.0012	0.001	0.016	0.55	<0.001	0.14	<0.0001	0.026	0.01	0.34	0.07	0.005	0.0011	<0.001	0.014	0.39	<0.001	0.12	<0.0001	0.024	0.01	0.28
MW55	17/01/2017	14		0.52	<0.001	<0.00005	0.003	0.001	0.2	<0.001	<0.005	<0.0001	0.001	0.001	0.012	0.16	<0.001	<0.00005	0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.001	0.001	0.008
MW1	15/02/2017	15		1.1	<0.001	<0.00005	0.01	0.002	0.33	0.003	<0.005	<0.0001	<0.001	<0.001	0.019	1.1	<0.001	<0.00005	0.005	0.002	0.21	0.003	<0.005	<0.0001	<0.001	<0.001	0.014
MW2	15/02/2017	15		0.35	<0.001	<0.00005	<0.001	<0.001	0.4	<0.001	0.012	<0.0001	<0.001	<0.001	<0.005	0.11	<0.001	<0.00005	<0.001	<0.001	0.08	<0.001	0.008	<0.0001	<0.001	<0.001	<0.005
MW3	15/02/2017	15		0.3	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.24	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW4	15/02/2017	15		0.12	<0.001	<0.00005	<0.001	<0.001	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.11	<0.001	<0.00005	<0.001	<0.001	0.14	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW5	15/02/2017	15		1.1	<0.001	<0.00005	0.002	0.007	0.32	0.001	<0.005	<0.0001	0.002	<0.001	0.011	1.1	<0.001	<0.00005	0.002	0.006	0.29	<0.001	<0.005	<0.0001	0.001	<0.001	0.009
MW10	15/02/2017	15		0.53	0.001	<0.00005	0.002	0.004	3.1	<0.001	<0.005	<0.0001	0.001	<0.001	0.016	0.47	0.001	<0.00005	0.001	0.002	4.8	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW11	20/02/2017	15		5.6	<0.001	<0.00005	0.001	<0.001	0.88	0.002	<0.005	<0.0001	0.004	<0.001	0.013	5.2	<0.001	<0.00005	<0.001	<0.001	0.31	<0.001	<0.005	<0.0001	0.003	<0.001	<0.005
MW12	20/02/2017	15		2.5	<0.001	<0.00005	<0.001	<0.001	0.77	<0.001	<0.005	<0.0001	0.002	0.003	0.006	2.2	<0.001	<0.00005	<0.001	<0.001	0.19	<0.001	<0.005	<0.0001	0.002	0.003	<0.005
MW26	17/02/2017	15		1.2	<0.001	<0.00005	0.003	0.001	0.39	0.001	<0.005	<0.0001	<0.001	<0.001	0.006	1.1	<0.001	<0.00005	0.003	<0.001	0.41	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW27	17/02/2017	15		1.4																							

Table 4
Groundwater Analytical Results
General Parameters, ASS and Major Anions
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity * (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW1	27/01/2016	2		8.1	360	510	<10	120	<10	120	<10	11	46	0.08	0.24	10.91
MW2	27/01/2016	2		7.3	250	370	11	37	<10	37	<10	12	93	0.30	0.13	3.08
MW3	27/01/2016	2		7.7	200	270	11	110	<10	110	<10	6.3	16	0.10	0.39	17.46
MW4	28/01/2016	2		7.4	120	180	<10	46	<10	46	<10	<5	23	0.22	0.22	9.20
MW5	28/01/2016	2		5.8	160	180	20	<20	<10	<20	<10	<5	41	1.00	0.12	4.00
MW6	28/01/2016	2		7.1	350	500	17	31	<10	31	<10	23	93	0.55	0.25	1.35
MW10	28/01/2016	2		7.9	210	250	19	62	<10	62	<10	5.6	27	0.31	0.21	11.07
MW11	29/01/2016	2		3.9	280	500	88	<20	<10	<20	<10	23	100	4.40	0.23	0.87
MW12	29/01/2016	2		4	110	160	33	<20	<10	<20	<10	9.8	41	1.65	0.24	2.04
MW26	29/01/2016	2		5.2	300	290	37	<20	<10	<20	<10	12	71	1.85	0.17	1.67
MW27	1/02/2016	2		4.4	190	180	26	<20	<10	<20	<10	6.4	34	1.30	0.19	3.13
MW28	1/02/2016	2		4.4	320	310	29	<20	<10	<20	<10	9.5	78	1.45	0.12	2.11
MW29	1/02/2016	2		5	230	290	27	<20	<10	<20	<10	17	49	1.35	0.35	1.18
MW30	1/02/2016	2		3.9	85	130	18	<20	<10	<20	<10	<5	25	0.90	0.20	4.00
MW31	1/02/2016	2		5.8	170	230	15	<20	<10	<20	<10	<5	69	0.75	0.07	4.00
MW32	1/02/2016	2		6.1	430	570	15	<20	<10	<20	<10	8.4	160	0.75	0.05	2.38
MW36	2/02/2016	2		7.2	120	140	<10	23	<10	23	<10	<5	15	0.43	0.33	4.60
MW37	2/02/2016	2		6.8	120	120	<10	<20	<10	<20	<10	<5	23	0.50	0.22	4.00
MW38	2/02/2016	2		6.5	450	620	34	53	<10	53	<10	<5	160	0.64	0.03	10.60
MW39	2/02/2016	2		7.7	240	390	<10	65	<10	65	<10	<5	76	0.15	0.07	13.00
MW40	3/02/2016	2		5	190	230	20	<20	<10	<20	<10	<5	73	1.00	0.07	4.00
MW41	3/02/2016	2		3.1	850	990	150	<20	<10	<20	<10	23	220	7.50	0.10	0.87
MW42	2/02/2016	2		4.3	190	160	25	<20	<10	<20	<10	<5	50	1.25	0.10	4.00
MW50	2/02/2016	2		6.6	4900	8500	20	28	<10	28	<10	57	3000	0.71	0.02	0.49
MW51	2/02/2016	2		6.3	1600	2500	13	<20	<10	<20	<10	34	810	0.65	0.04	0.59
MW52	3/02/2016	2		8.1	25,000	37,000	15	210	<10	210	<10	470	13,000	0.07	0.04	0.45
MW55	6/02/2016	2		8.2	520	730	<10	99	<10	99	<10	60	87	0.10	0.69	1.65
MW1	16/02/2016	3		7.4	330	500	<10	180	-	180	<10	10	45	0.06	0.22	18.00
MW2	16/02/2016	3		5.8	190	270	18	21	-	21	<10	10	44	0.86	0.23	2.10
MW3	16/02/2016	3		6.7	210	260	17	93	-	93	<10	6.2	15	0.18	0.41	15.00
MW4	16/02/2016	3		6.5	110	140	<10	75	-	75	<10	<5	15	0.13	0.33	4.00
MW5	23/02/2016	3		5.5	130	170	28	<20	<10	<20	<10	<5	39	1.40	0.13	4.00
MW6	16/02/2016	3		5.8	270	430	34	27	-	27	<10	22	61	1.26	0.36	1.23
MW10	23/02/2016	3		6.9	230	290	<10	69	<10	69	<10	9.6	28	0.14	0.34	7.19
MW11	23/02/2016	3		4.3	480	710	48	<20	<10	<20	<10	46	130	2.40	0.35	0.43
MW12	23/02/2016	3		4.2	150	220	32	<20	<10	<20	<10	12	45	1.60	0.27	1.67
MW22	19/02/2016	3		3.6	240	490	59	<20	-	<20	<10	23	76	2.95	0.30	0.87
MW23	19/02/2016	3		6.9	180	270	<10	47	-	47	<10	10	31	0.21	0.32	4.70
MW24	19/02/2016	3		4.3	430	700	46	<20	-	<20	<10	24	170	2.30	0.14	0.83
MW25	19/02/2016	3		4.3	150	230	32	<20	-	<20	<10	9.7	18	1.60	0.54	2.06
MW26	19/02/2016	3		4.6	270	340	38	<20	-	<20	<10	13	71	1.90	0.18	1.54
MW27	19/02/2016	3		4.2	200	190	33	<20	-	<20	<10	8.7	34	1.65	0.26	2.30
MW28	19/02/2016	3		4.5	300	340	31	<20	-	<20	<10	9.9	70	1.55	0.14	2.02
MW29	22/02/2016	3		4.9	270	270	24	<20	<10	<20	<10	17	48	1.20	0.35	1.18
MW30	22/02/2016	3		4	79	120	24	<20	<10	<20	<10	<5	28	1.20	0.18	4.00
MW31	22/02/2016	3		5.6	190	250	26	<20	<10	<20	<10	<5	63	1.30	0.08	4.00
MW32	22/02/2016	3		6.1	370	490	16	<20	<10	<20	<10	5.5	120	0.80	0.05	3.64
MW36	22/02/2016	3		6.9	110	120	<10	<20	<10	<20	<10	<5	15	0.50	0.33	4.00
MW37	22/02/2016	3		6.4	110	140	<10	<20	<10	<20	<10	<5	23	0.50	0.22	4.00
MW38	22/02/2016	3		6.8	430	530	25	48	<10	48	<10	<5	150	0.52	0.03	9.60
MW39	22/02/2016	3		7.5	240	430	<10	74	<10	74	<10	<5	74	0.14	0.07	14.80
MW40	18/02/2016	3		4	220	310	24	<20	<10	<20	<10	12	80	1.20	0.15	1.67
MW41	18/02/2016	3		3.4	830	910	120	<20	<10	<20	<10	18	210	6.00	0.09	1.11
MW42	22/02/2016	3		4.4	190	200	28	<20	<10	<20	<10	<5	49	1.40	0.10	4.00
MW50	24/02/2016	3		6	4400	8000	19	24	<10	24	<10	57	2900	0.79	0.02	0.42
MW51	24/02/2016	3		5.6	1300	2300	14	<20	<10	<20	<10	33	750	0.70	0.04	0.61
MW52	24/02/2016	3		7.4	24000	38000	16	170	<10	170	<10	430	12000	0.09	0.04	0.40
MW55	17/02/2016	3		8.1	590	900	<10	110	<10	110	<10	61	89	0.09	0.69	1.80
MW1	15/03/2016	4		7.7	430	650	<10	-	<10	98	<10	11	76	-	0.14	-
MW2	15/03/2016	4		6	150	220	12	-	<10	<20	<10	9.1	32	-	0.28	-
MW3	15/03/2016	4		6.8	160	280	<10	-	<10	86	<10	5.7	15	-	0.38	-
MW4	15/03/2016	4		6.8	69	110	<10	-	<10	48	<10	<5	12	-	0.42	-
MW5	15/03/2016	4		5.1	140	180	30	-	<10	<20	<10	<5	37	-	0.14	-
MW6	15/03/2016	4		5.6	140	210	25	-	<10	<20	<10	15	19	-	0.79	-
MW10	17/03/2016	4		6.8	210	260	15	-	<10	49	<10	7.8	27	-	0.29	-
MW11	17/03/2016	4		4.1	520	800	54	-	<10	<20	<10	55	140	-	0.39	-
MW12	17/03/2016	4		4.2	120	180	25	-	<10	<20	<10	8.9	41	-	0.22	-
MW22	21/03/2016	4		4	240	390	52	<20	<10	<20	<10	22	87	2.60	0.25	0.91
MW23	17/03/2016	4		6.4	110	190	<10	-	<10	<20	<10	12	35	-	0.34	-
MW24	17/03/2016	4		4.3	410	670	61	-	<10	<20	<10	22	160	-	0.14	-
MW25	17/03/2016	4		4.2	130	240	23	-	<10	<20	<10	7.3	19	-	0.38	-
MW26	17/03/2016	4		4.3	280	340	37	-	<10	<20	<10	13	74	-	0.18	-
MW27	17/03/2016	4		4	180	190	26	-	<10	<20	<10	6.3	30	-	0.21	-
MW28	17/03/2016	4		4.3	190	270	15	-	<10	<20	<10	5.9	49	-	0.12	-
MW29	18/03/2016	4		5.2	220	260	23	-	<10	<20	<10	15	45	-	0.33	-
MW30	18/03/2016	4		3.9	79	100	21	-	<10	<20	<10	<5	26	-	0.19	-
MW31	18/03/2016	4		5.6	180	200	17	-	<10	<20	<10	<5	61	-	0.08	-
MW32	18/03/2016	4		5.9	230	360	13	-	<10	<20	<10	<5	86	-	0.06	-
MW36	18/03/2016	4		6.7	95	120	<10	-	<10	<20	<10	<5	15	-	0.33	-
MW37	18/03/2016	4		6.4	110	130	<10	-	<10	<20	<10	<5	20	-	0.2	

Table 4
Groundwater Analytical Results
General Parameters, ASS and Major Anions
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW1	11/04/2016	5		7.9	430	700	<10	-	<10	110	<10	12	89	-	0.13	-
MW2	11/04/2016	5		6.8	120	220	22	-	<10	<20	<10	8	44	-	0.18	-
MW3	11/04/2016	5		7.5	180	230	22	-	<10	86	<10	5.9	14	-	0.42	-
MW4	11/04/2016	5		7.2	76	130	<10	-	<10	39	<10	<5	14	-	0.36	-
MW5	11/04/2016	5		5.2	130	190	40	-	<10	<20	<10	<5	40	-	0.13	-
MW6	11/04/2016	5		6.1	120	180	39	-	<10	<20	<10	13	22	-	0.59	-
MW10	11/04/2016	5		7.1	150	200	24	-	<10	48	<10	<5	34	-	0.15	-
MW11	15/04/2016	5		3.9	410	750	46	-	<10	<20	<10	48	120	-	0.40	-
MW12	15/04/2016	5		4.3	120	190	24	-	<10	<20	<10	8.6	41	-	0.21	-
MW26	15/04/2016	5		4.1	300	380	45	-	<10	<20	<10	13	76	-	0.17	-
MW27	15/04/2016	5		4.1	160	180	25	-	<10	<20	<10	<5	44	-	0.11	-
MW28	15/04/2016	5		4.5	160	270	14	-	<10	<20	<10	5.5	60	-	0.09	-
MW29	14/04/2016	5		5.2	230	280	33	-	<10	<20	<10	16	43	-	0.37	-
MW30	14/04/2016	5		3.9	94	140	22	-	<10	<20	<10	<5	28	-	0.18	-
MW31	14/04/2016	5		5.4	180	260	27	-	<10	<20	<10	<5	70	-	0.07	-
MW32	14/04/2016	5		6	330	460	16	-	<10	<20	<10	5.5	110	-	0.05	-
MW36	13/04/2016	5		6.6	95	130	<10	-	<10	<20	<10	<5	15	-	0.33	-
MW37	13/04/2016	5		6.1	95	120	<10	-	<10	<20	<10	<5	18	-	0.28	-
MW38	13/04/2016	5		7	400	610	15	-	<10	54	<10	6.3	140	-	0.05	-
MW39	13/04/2016	5		7.3	280	440	<10	-	<10	53	<10	11	76	-	0.14	-
MW40	14/04/2016	5		3.5	650	710	110	-	<10	<20	<10	9	170	-	0.05	-
MW41	14/04/2016	5		4.9	230	280	23	-	<10	<20	<10	<5	77	-	0.06	-
MW42	12/04/2016	5		4.2	180	210	28	-	<10	<20	<10	<5	50	-	0.10	-
MW50	12/04/2016	5		6.8	4700	8500	25	-	<10	29	<10	54	2900	-	0.02	-
MW51	12/04/2016	5		6.3	1400	2500	15	-	<10	<20	<10	35	820	-	0.04	-
MW52	12/04/2016	5		7.9	20,000	32,000	13	-	<10	150	<10	390	8700	-	0.04	-
MW55	11/04/2016	5		-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	9/05/2016	6		6.9	290	430	16	85	<10	85	<10	10	56	0.19	0.18	8.50
MW2	9/05/2016	6		5.8	140	230	31	25	<10	25	<10	10	36	1.24	0.28	2.50
MW3	9/05/2016	6		6.5	180	220	34	78	<10	78	<10	6.4	16	0.44	0.40	12.19
MW4	9/05/2016	6		6.5	76	120	20	37	<10	37	<10	<5	16	0.54	0.31	7.40
MW5	2/05/2016	6		4.7	160	180	45	<20	<10	<20	<10	<5	46	2.25	0.11	4.00
MW6	2/05/2016	6		5.4	150	210	66	<20	<10	<20	<10	17	23	3.30	0.74	1.18
MW10	6/05/2016	6		6.3	180	170	33	35	<10	35	<10	5.9	29	0.94	0.20	5.93
MW11	6/05/2016	6		4.3	490	640	68	<20	<10	<20	<10	57	120	3.40	0.48	0.35
MW12	6/05/2016	6		4.1	200	270	47	<20	<10	<20	<10	20	53	2.35	0.38	1.00
MW26	6/05/2016	6		4.2	240	300	50	<20	<10	<20	<10	13	58	2.50	0.22	1.54
MW27	6/05/2016	6		3.8	200	200	35	<20	<10	<20	<10	10	28	1.75	0.36	2.00
MW28	6/05/2016	6		4.4	220	260	28	<20	<10	<20	<10	6	59	1.40	0.10	3.33
MW29	3/05/2016	6		4.7	270	280	55	<20	<10	<20	<10	18	46	2.75	0.39	1.11
MW30	3/05/2016	6		3.8	100	140	26	<20	<10	<20	<10	<5	29	1.30	0.17	4.00
MW31	3/05/2016	6		5.2	200	240	47	<20	<10	<20	<10	<5	67	2.35	0.07	4.00
MW32	3/05/2016	6		5.6	360	420	38	<20	<10	<20	<10	<5	130	1.90	0.04	4.00
MW36	5/05/2016	6		6.5	140	120	<10	<20	<10	<20	<10	<5	16	0.50	0.31	4.00
MW37	5/05/2016	6		5.4	110	100	<10	<20	<10	<20	<10	<5	19	0.50	0.26	4.00
MW38	5/05/2016	6		6.5	3800	4300	31	46	<10	46	<10	150	1300	0.67	0.12	0.31
MW39	5/05/2016	6		6.7	340	390	11	36	<10	36	<10	16	84	0.31	0.19	2.25
MW40	5/05/2016	6		4.7	270	290	47	<20	<10	<20	<10	<5	80	2.35	0.06	4.00
MW41	5/05/2016	6		3.4	740	780	130	<20	<10	<20	<10	12	190	6.50	0.66	1.67
MW42	5/05/2016	6		4.2	230	220	34	<20	<10	<20	<10	<5	54	1.70	0.09	4.00
MW50	4/05/2016	6		6.1	4700	7300	26	27	<10	27	<10	54	2700	0.96	0.02	0.50
MW51	4/05/2016	6		7.6	1600	2900	26	71	<10	71	<10	37	820	0.37	0.05	1.92
MW52	4/05/2016	6		7.2	22,000	36,000	19	130	<10	130	<10	420	12,000	0.15	0.04	0.31
MW55	9/05/2016	6		6.5	540	790	81	110	<10	110	<10	52	90	0.74	0.58	2.12
MW1	28/06/2016	7		7	240	350	<10	71	<10	71	<10	9.5	34	0.14	0.28	7.47
MW2	27/06/2016	7		6.4	200	300	<10	26	<10	26	<10	12	48	0.38	0.25	2.17
MW3	27/06/2016	7		7.3	270	310	<10	89	<10	89	<10	11	25	0.11	0.44	8.09
MW4	28/06/2016	7		6.7	130	200	<10	42	<10	42	<10	9.7	20	0.24	0.49	4.33
MW5	28/06/2016	7		5.4	160	190	22	<20	<10	<20	<10	<5	44	1.10	0.11	4.00
MW6	28/06/2016	7		5.9	190	290	18	<20	<10	<20	<10	19	30	0.90	0.63	1.05
MW10	24/06/2016	7		6.9	220	220	21	42	<10	42	<10	10	18	0.50	0.56	2.00
MW11	24/06/2016	7		4.3	480	750	71	<20	<10	<20	<10	61	130	3.55	0.47	0.33
MW12	24/06/2016	7		4.1	210	340	83	<20	<10	<20	<10	24	59	4.15	0.41	0.83
MW26	27/06/2016	7		4	120	210	30	<20	<10	<20	<10	6.9	29	1.50	0.24	2.90
MW27	27/06/2016	7		4	190	230	39	<20	<10	<20	<10	9.2	38	1.95	0.24	2.17
MW29	23/06/2016	7		5	260	280	43	<20	<10	<20	<10	15	47	2.15	0.32	1.33
MW30	23/06/2016	7		3.9	88	140	20	<20	<10	<20	<10	<5	31	1.00	0.16	4.00
MW31	23/06/2016	7		5.5	180	260	18	<20	<10	<20	<10	<5	68	0.90	0.07	4.00
MW32	23/06/2016	7		5.6	530	700	37	<20	<10	<20	<10	9.3	190	1.85	0.05	2.15
MW36	23/06/2016	7		6.7	98	120	<10	20	<10	20	<10	<5	16	0.50	0.31	4.00
MW37	23/06/2016	7		5.6	130	110	20	<20	<10	<20	<10	<5	21	1.00	0.24	4.00
MW38	23/06/2016	7		6.7	2400	2700	130	300	<10	300	<10	55	630	0.43	0.09	5.45
MW39	23/06/2016	7		6.8	350	550	20	39	<10	39	<10	13	140	0.51	0.09	3.00
MW42	22/06/2016	7		4.3	160	180	1100	<20	<10	<20	<10	<5	49	55.00	0.10	4.00
MW50	21/06/2016	7		6.4	5500	8000	87	52	<10	52	<10	59	2600	1.67	0.02	0.88
MW51	21/06/2016	7		5.8	1800	3100	43	<20	<10	<20	<10	43	920	2.15	0.05	0.47
MW52	21/06/2016	7		6.1	12,000	15,000	37	<20	<10	<20	<10	190	6000	1.85	0.03	0.11
MW55	27/06/2016	7		6.8	460	730	10	81	<10	81	<10	45	95	0.12	0.47	1.80

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 MW = Monitoring well
 µS/cm = Microsiemens per centimetre

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Table 4
Groundwater Analytical Results
General Parameters, ASS and Major Anions
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity * (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW1	19/07/2016	8		6.5	190	290	25	50	<10	50	<10	10	36	0.20	0.28	5.00
MW2	19/07/2016	8		6.7	180	280	23	71	<10	71	<10	9.4	21	0.14	0.45	7.55
MW3	19/07/2016	8		6.5	260	320	48	79	<10	79	<10	11	28	0.13	0.39	7.18
MW4	19/07/2016	8		6.5	150	210	27	53	<10	53	<10	5	21	0.19	0.24	10.60
MW5	18/07/2016	8		5.1	250	210	42	<20	<10	<20	<10	<5	37	2.10	0.14	4.00
MW6	18/07/2016	8		5.8	180	280	45	26	<10	26	<10	17	30	2.25	0.57	1.53
MW10	18/07/2016	8		5.9	190	230	47	54	<10	54.04	<10	10	25	0.87	0.40	5.40
MW11	15/07/2016	8		4.1	450	780	55	<20	<10	<20	<10	53	130	2.75	0.41	0.38
MW12	15/07/2016	8		3.9	200	390	55	<20	<10	20	<10	22	62	2.75	0.35	0.91
MW26	19/07/2016	8		4.5	77	100	25	<20	<10	<20	<10	<5	18	1.25	0.28	4.00
MW27	19/07/2016	8		4	210	230	42	<20	<10	<20	<10	8.6	36	2.10	0.24	2.33
MW28	19/07/2016	8		4.4	270	280	54	<20	<10	<20	<10	9.8	54	2.70	-	2.04
MW29	14/07/2016	8		5	230	290	-	<20	<10	<20	<10	17	42	-	0.40	1.18
MW30	14/07/2016	8		4	110	200	-	<20	<10	<20	<10	5.2	34	-	0.15	4.00
MW31	14/07/2016	8		4.5	470	450	-	<20	<10	<20	<10	17	85	-	0.06	4.00
MW32	14/07/2016	8		5.5	680	960	-	<20	<10	<20	<10	15	240	-	0.06	1.33
MW36	14/07/2016	8		6.8	110	130	-	28	<10	28	<10	<5	16	-	0.31	5.60
MW37	14/07/2016	8		5.3	96	110	-	<20	<10	<20	<10	7	18	-	0.28	4.00
MW38	14/07/2016	8		6.3	3000	4200	-	180	<10	180	<10	100	1000	-	0.10	1.80
MW39	14/07/2016	8		6.5	340	470	-	47	<10	47	<10	7.4	99	-	0.07	6.35
MW40	13/07/2016	8		5	270	340	35	<20	<10	<20	<10	<5	88	1.75	0.06	4.00
MW41	13/07/2016	8		3.2	1100	1400	150	<20	<10	<20	<10	28	350	7.50	-	0.71
MW42	13/07/2016	8		4.1	180	210	34	<20	<10	<20	<10	<5	58	1.70	0.09	4.00
MW50	12/07/2016	8		6.2	4500	8200	68	46	<10	46	<10	57	2700	1.48	0.02	0.81
MW51	12/07/2016	8		4.2	2100	3200	34	<20	<10	<20	<10	47	1000	1.70	0.05	0.43
MW52	12/07/2016	8		6.2	11,000	16,000	47	35	<10	35	<10	160	4800	1.34	0.03	0.22
MW55	19/07/2016	8		6.5	410	660	42	77	<10	77	<10	35	89	0.55	0.39	2.20
MW1	25/08/2016	9		7.2	200	360	16	80	<10	80	<10	8.7	39	0.20	0.22	9.20
MW2	24/08/2016	9		7.7	180	280	510	120	<10	120	<10	<5	21	4.25	0.24	24.00
MW3	24/08/2016	9		7	210	250	610	77	<10	77	<10	8.5	18	7.92	0.47	9.06
MW4	24/08/2016	9		7.1	160	230	280	62	<10	62	<10	<5	18	4.52	0.28	12.40
MW5	24/08/2016	9		6.5	300	220	12	42	<10	42	<10	5.9	39	0.29	0.15	7.12
MW6	24/08/2016	9		6.5	440	720	11	25	<10	25	<10	44	110	0.44	0.40	0.57
MW10	23/08/2016	9		7	190	240	<10	54	<10	54	<10	6	18	0.19	0.33	9.00
MW11	23/08/2016	9		4.4	220	390	38	<20	<10	<20	<10	22	65	1.90	0.34	0.91
MW12	23/08/2016	9		4.2	190	290	38	<20	<10	<20	<10	14	58	1.90	0.24	1.43
MW26	19/08/2016	9		4.8	52	78	10	<20	<10	<20	<10	<5	18	0.50	0.28	4.00
MW27	19/08/2016	9		3.8	200	310	39	<20	<10	<20	<10	14	35	1.95	0.40	1.43
MW29	19/08/2016	9		4.9	220	310	31	<20	<10	<20	<10	20	50	1.55	0.40	1.00
MW30	19/08/2016	9		6.2	110	150	11	<20	<10	<20	<10	<5	28	0.55	0.18	4.00
MW31	19/08/2016	9		4.6	540	420	69	<20	<10	<20	<10	12	68	3.45	0.18	1.67
MW32	19/08/2016	9		5.6	540	750	31	<20	<10	<20	<10	11	190	1.55	0.06	1.82
MW36	15/08/2016	9		6.6	120	150	19	35	<10	35	<10	<5	13	0.54	0.38	7.00
MW37	15/08/2016	9		5.1	120	120	38	<20	<10	<20	<10	<5	23	1.90	0.22	4.00
MW38	15/08/2016	9		6.4	1200	1700	100	90	<10	90	<10	29	430	1.11	0.07	3.10
MW39	15/08/2016	9		6.7	350	410	26	41	<10	41	<10	<5	99	0.63	0.05	8.20
MW40	15/08/2016	9		5.1	300	330	47	<20	<10	<20	<10	<5	95	2.35	0.05	4.00
MW42	15/08/2016	9		4.4	180	200	36	<20	<10	<20	<10	<5	51	1.80	0.10	4.00
MW50	15/08/2016	9		6.1	5100	9200	79	35	<10	35	<10	60	2700	2.26	0.02	0.58
MW51	15/08/2016	9		5.7	2400	4400	78	<20	<10	<20	<10	53	1300	3.90	0.04	0.38
MW52	15/08/2016	9		7.1	25000	37000	60	190	<10	190	<10	460	13000	0.32	0.04	0.41
MW55	24/08/2016	9		7.2	420	570	<10	81	<10	81	<10	34	81	0.12	0.42	2.38
MW1	29/09/2016	10		6.9	210	310	11	72	<10	72	<10	7.1	32	0.15	0.22	10.14
MW2	4/10/2016	10		7.3	280	430	45	160	<10	160	<10	8.5	52	0.28	0.16	18.82
MW3	22/09/2016	10		6.4	190	240	28	70	<10	70	<10	<5	18	0.40	0.14	14.00
MW4	4/10/2016	10		6.6	170	250	<10	85	<10	85	<10	<5	14	0.12	0.18	17.00
MW5	29/09/2016	10		6.3	130	150	<10	32	<10	32	<10	<5	24	0.31	0.10	6.40
MW6	29/09/2016	10		6.5	1200	1700	42	140	<10	140	<10	51	310	0.30	0.16	2.75
MW10	22/09/2016	10		7.1	180	250	16	63	<10	63	<10	6.1	22	0.25	0.28	10.33
MW11	23/09/2016	10		4.3	250	360	59	<20	<10	<20	<10	29	78	2.95	0.37	0.69
MW12	23/09/2016	10		4.2	140	230	38	<20	<10	<20	<10	12	53	1.90	0.23	1.67
MW26	29/09/2016	10		4.1	260	290	60	<20	<10	<20	<10	<5	63	3.00	0.04	4.00
MW27	29/09/2016	10		4.7	180	170	38	<20	<10	<20	<10	<5	46	1.90	0.05	4.00
MW29	27/09/2016	10		4.2	390	320	63	<20	<10	<20	<10	16	59	3.15	0.27	1.25
MW30	27/09/2016	10		5.5	140	170	15	<20	<10	<20	<10	<5	32	0.75	0.08	4.00
MW31	27/09/2016	10		4.6	610	350	74	<20	<10	<20	<10	11	69	3.70	0.16	1.82
MW32	27/09/2016	10		6.4	520	560	34	23	<10	23	<10	5.3	190	1.48	0.03	4.34
MW36	27/09/2016	10		6.6	140	140	13	29	<10	29	<10	<5	15	0.45	0.17	5.80
MW37	27/09/2016	10		4.8	170	150	46	<20	<10	<20	<10	<5	48	2.30	0.05	4.00
MW38	27/09/2016	10		6.2	580	840	84	67	<10	67	<10	8.7	220	1.25	0.04	7.70
MW39	27/09/2016	10		6.6	330	380	19	40	<10	40	<10	<5	90	0.48	0.03	8.00
MW40	28/09/2016	10		5	290	330	64	<20	<10	<20	<10	<5	86	3.20	0.03	4.00
MW41	28/09/2016	10		3.8	670	700	110	<20	<10	<20	<10	7	210	5.50	0.03	2.86
MW42	28/09/2016	10		4.3	180	210	33	<20	<10	<20	<10	<5	47	1.65	0.05	4.00
MW50	28/09/2016	10		6.1	4600	8100	45	26	<10	26	<10	60	2900	1.73	0.02	0.43
MW51	28/09/2016	10		6	2800	5000	96	22	<10	22	<10	60	1500	4.36	0.04	0.37
MW52	20/09/2016	10		6.8	19,000	29,000	37	120	<10	120	<10	-	9700	0.31	#	#
MW55	22/09/2016	10		6.7	490	790	27	98	<10	98	<10	50	82	0.28	0.61	1.96

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well
µS/cm = Microsiemens per centimetre

Table 4
Groundwater Analytical Results
General Parameters, ASS and Major Anions
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW1	24/10/2016	11		7.9	260	340	<10	75	<10	75	<10	8.6	37	0.13	0.23	8.72
MW2	1/11/2016	11		7.2	330	440	<10	140	<10	140	<10	<5	47	0.07	0.11	28.00
MW3	1/11/2016	11		6.3	220	250	30	69	<10	69	<10	<5	23	0.43	0.22	13.80
MW4	31/10/2016	11		6.5	120	210	28	54	<10	54	<10	<5	21	0.52	0.24	10.80
MW5	24/10/2016	11		6.5	160	96	22	<20	<10	<20	<10	<5	23	1.10	0.22	4.00
MW6	24/10/2016	11		7.2	650	930	28	76	<10	76	<10	47	180	0.37	0.26	1.62
MW10	31/10/2016	11		6.6	160	250	17	60	<10	60	<10	<5	22	0.28	0.23	12.00
MW11	31/10/2016	11		4.1	400	770	64	<20	<10	<20	<10	51	140	3.20	0.36	0.39
MW12	31/10/2016	11		4.2	140	220	34	<20	<10	<20	<10	12	52	1.70	0.23	1.67
MW26	28/10/2016	11		4.1	320	430	62	<20	<10	<20	<10	13	86	3.10	0.15	1.54
MW27	28/10/2016	11		3.4	320	520	71	<20	<10	<20	<10	27	65	3.55	0.42	0.74
MW29	28/10/2016	11		4.1	370	330	59	<20	<10	<20	<10	18	53	2.95	0.34	1.11
MW30	28/10/2016	11		7.2	230	310	14	63	<10	63	<10	<5	31	0.22	0.16	12.60
MW31	28/10/2016	11		4.8	500	340	98	<20	<10	<20	<10	<5	120	4.90	0.04	4.00
MW32	28/10/2016	11		6.2	490	640	48	22	<10	22	<10	<5	210	2.18	0.02	4.40
MW36	26/10/2016	11		6.5	110	140	14	25	<10	25	<10	<5	14	0.56	0.36	5.00
MW37	26/10/2016	11		4.8	130	100	34	<20	<10	<20	<10	<5	22	1.70	0.23	4.00
MW38	26/10/2016	11		6.2	440	700	62	66	<10	66	<10	<5	160	0.94	0.03	13.20
MW39	26/10/2016	11		6.5	260	380	24	48	<10	48	<10	<5	80	0.50	0.06	9.60
MW40	26/10/2016	11		5.1	210	320	44	<20	<10	<20	<10	<5	87	2.20	0.06	4.00
MW41	26/10/2016	11		3.7	680	760	140	<20	<10	<20	<10	9.2	210	7.00	0.04	2.17
MW42	26/10/2016	11		4.4	150	210	41	<20	<10	<20	<10	<5	49	2.05	0.10	4.00
MW50	24/10/2016	11		5.8	4700	8600	74	36	<10	36	<10	60	2600	2.06	0.02	0.60
MW51	25/10/2016	11		6.5	2700	4400	32	23	<10	23	<10	56	1400	1.39	0.04	0.41
MW52	24/10/2016	11		6.4	17000	26000	69	120	<10	120	<10	310	9400	0.58	0.03	0.39
MW55	1/11/2016	11		6.5	450	710	38	120	<10	120	<10	47	65	0.32	0.72	2.55
MW1	22/11/2016	12		7.4	320	460	13	110	<10	110	<10	25	36	0.53	0.55	8.18
MW2	22/11/2016	12		7.2	420	600	18	140	<10	140	<10	33	88	0.13	0.38	4.24
MW3	22/11/2016	12		6.8	150	250	48	90	<10	90	<10	11	20	0.53	0.55	8.18
MW4	22/11/2016	12		6.8	130	200	24	61	<10	61	<10	5.7	22	0.39	0.26	10.70
MW5	22/11/2016	12		5.4	180	130	39	<20	<10	<20	<10	<5	33	1.95	0.15	4.00
MW6	22/11/2016	12		5.9	380	630	72	49	<10	49	<10	89	100	1.47	0.89	0.55
MW10	25/11/2016	12		6.7	220	270	<10	85	<10	85	<10	20	12	0.12	1.67	4.25
MW11	25/11/2016	12		4.3	150	240	29	<20	<10	<20	<10	23	44	1.45	0.52	0.87
MW12	25/11/2016	12		4.6	120	190	11	<20	<10	<20	<10	15	36	0.55	0.42	1.33
MW26	25/11/2016	12		3.8	350	500	55	<20	<10	<20	<10	62	130	2.75	0.48	0.32
MW27	25/11/2016	12		3.5	470	480	89	<20	<10	<20	<10	79	56	4.45	1.41	0.25
MW29	24/11/2016	12		4.2	330	340	36	<20	<10	<20	<10	20	53	1.80	0.38	1.00
MW30	24/11/2016	12		6.9	200	250	<10	51	<10	51	<10	<5	31	0.20	0.16	10.20
MW31	24/11/2016	12		4.4	500	360	70	<20	<10	<20	<10	10	71	3.50	0.14	2.00
MW32	24/11/2016	12		6.4	400	530	17	<20	<10	<20	<10	<5	140	0.85	0.04	4.00
MW36	24/11/2016	12		6.6	110	130	<10	22	<10	22	<10	<5	13	0.45	0.38	4.40
MW37	24/11/2016	12		5.1	78	72	23	<20	<10	<20	<10	<5	14	1.15	0.36	4.00
MW38	24/11/2016	12		5.4	390	550	12	52	<10	52	<10	5.8	130	0.23	0.04	8.97
MW39	24/11/2016	12		7	250	400	17	69	<10	69	<10	<5	74	0.25	0.07	4.00
MW40	28/11/2016	12		5.2	300	290	27	<20	<10	<20	<10	<5	90	1.35	0.06	4.00
MW41	28/11/2016	12		3.7	790	580	140	<20	<10	<20	<10	14	160	7.00	0.09	1.43
MW42	28/11/2016	12		4.3	200	200	35	<20	<10	<20	<10	<5	51	1.75	0.10	4.00
MW50	23/11/2016	12		6.5	5000	8700	25	28	<10	28	<10	59	2800	0.89	0.02	0.47
MW51	23/11/2016	12		6	2800	4900	39	21	<10	21	<10	60	1600	1.86	0.04	0.35
MW52	23/11/2016	12		7.2	19000	29000	33	140	<10	140	<10	340	9700	0.24	0.04	0.41
MW55	22/11/2016	12		6.6	550	830	50	120	<10	120	<10	170	88	0.53	0.55	8.18
MW1	13/12/2016	13		7.1	410	600	19	140	<10	140	<10	43	39	0.14	1.10	3.26
MW2	13/12/2016	13		7	470	700	23	120	<10	120	<10	71	110	0.19	0.65	1.69
MW3	13/12/2016	13		6.7	230	340	53	120	<10	120	<10	22	22	0.44	1.00	5.45
MW4	13/12/2016	13		6.5	210	200	24	53	<10	53	<10	5.2	29	0.45	0.18	10.19
MW5	13/12/2016	13		4.7	350	330	40	<20	<10	<20	<10	<5	94	2.00	0.05	4.00
MW6	13/12/2016	13		5.3	330	470	67	<20	<10	<20	<10	48	110	3.35	0.44	0.42
MW10	13/12/2016	13		6.9	200	300	20	88	<10	88	<10	19	20	0.23	0.95	4.63
MW11	16/12/2016	13		4.1	540	310	59	<20	<10	<20	<10	23	72	2.95	0.32	0.87
MW12	16/12/2016	13		4.5	130	210	24	<20	<10	<20	<10	18	48	1.20	0.38	1.11
MW26	16/12/2016	13		3.7	520	640	65	<20	<10	<20	<10	56	140	3.25	0.40	0.36
MW27	16/12/2016	13		3.8	270	260	46	<20	<10	<20	<10	33	41	2.30	0.80	0.61
MW29	19/12/2016	13		4	270	340	82	<20	<10	<20	<10	48	63	4.10	0.76	0.42
MW30	19/12/2016	13		7.2	130	220	<10	34	<10	34	<10	11	34	0.29	0.32	3.09
MW31	19/12/2016	13		4.5	340	330	62	<20	<10	<20	<10	21	74	3.10	0.28	0.95
MW32	19/12/2016	13		6.4	270	410	29	30	<10	30	<10	7.6	120	0.97	0.06	3.95
MW36	14/12/2016	13		6.9	110	92	<10	22	<10	22	<10	32	10	0.45	3.20	0.69
MW37	15/12/2016	13		4.6	32	80	19	<20	<10	<20	<10	5.4	18	0.95	0.30	3.70
MW38	14/12/2016	13		7.2	400	540	28	70	<10	70	<10	28	130	0.40	0.22	2.50
MW39	14/12/2016	13		7.1	270	370	15	57	<10	57	<10	<5	80	0.26	0.06	11.40
MW40	15/12/2016	13		4.6	240	320	40	<20	<10	<20	<10	6.5	85	2.00	0.08	3.08
MW41	15/12/2016	13		3.6	620	550	120	<20	<10	<20	<10	29	150	6.00	0.19	0.69
MW42	19/12/2016	13		4.3	130	210	36	<20	<10	<20	<10	<5	52	1.80	0.10	4.00
MW50	14/12/2016	13		5.9	4600	8300	21	27	<10	27	<10	180	2700	0.78	0.07	0.15
MW51	14/12/2016	13		5.6	2700	4700	27	<20	<10	<20	<10	160	1500	1.35	0.11	0.13
MW52	14/12/2016	13		6.7	18000	29000	20	160	<10	160	<10	1100	9900	0.13	0.11	0.15
MW55	13/12/2016	13		6.5	540	860	42	110	<10	110						

Table 4
Groundwater Analytical Results
General Parameters, ASS and Major Anions
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity * (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW1	17/01/2017	14		7.7	370	550	18	150	<10	150	<10	34	33	0.12	1.03	4.41
MW2	17/01/2017	14		7	420	620	29	130	<10	130	<10	41	93	0.22	0.44	3.17
MW3	17/01/2017	14		6.6	300	400	41	140	<10	140	<10	<5	26	0.29	0.10	56.00
MW4	17/01/2017	14		7	180	200	24	58	<10	58	<10	<5	26	0.41	0.10	23.20
MW5	17/01/2017	14		5.2	190	210	50	<20	<10	<20	<10	<5	45	5.00	0.06	4.00
MW6	17/01/2017	14		4.9	700	1200	79	<20	<10	<20	<10	170	250	7.90	0.68	0.06
MW10	24/01/2017	14		7.4	210	300	23	99	<10	99	<10	18	24	0.23	0.75	5.50
MW11	24/01/2017	14		4.4	160	270	56	<20	<10	<20	<10	47	52	5.60	0.90	0.21
MW12	24/01/2017	14		4.3	140	220	42	<20	<10	<20	<10	34	54	4.20	0.63	0.29
MW26	20/01/2017	14		3.8	440	590	81	<20	<10	<20	<10	42	140	8.10	0.30	0.24
MW27	20/01/2017	14		4.2	190	190	40	<20	<10	<20	<10	25	53	4.00	0.47	0.40
MW29	23/01/2017	14		4.3	280	300	58	<20	<10	<20	<10	51	60	5.80	0.85	0.20
MW30	23/01/2017	14		6.5	130	200	16	<20	<10	<20	<10	12	38	1.60	0.32	0.83
MW31	23/01/2017	14		5.1	270	270	49	<20	<10	<20	<10	16	75	4.90	0.21	0.63
MW32	23/01/2017	14		5.8	290	460	35	<20	<10	<20	<10	14	130	3.50	0.11	0.71
MW36	19/01/2017	14		6.2	120	120	<10	<20	<10	<20	<10	<5	15	0.50	0.17	4.00
MW37	19/01/2017	14		5.7	120	130	29	<20	<10	<20	<10	<5	23	2.90	0.11	4.00
MW38	19/01/2017	14		6.2	370	540	29	57	<10	57	<10	14	130	0.51	0.11	4.07
MW39	19/01/2017	14		6.8	230	370	21	56	<10	56	<10	9.9	69	0.38	0.14	5.66
MW40	19/01/2017	14		4.7	280	340	34	<20	<10	<20	<10	11	85	3.40	0.13	0.91
MW41	19/01/2017	14		3.6	690	510	130	<20	<10	<20	<10	31	130	13.00	0.24	0.32
MW42	19/01/2017	14		4.2	190	220	37	<20	<10	<20	<10	6.3	50	3.70	0.13	1.59
MW50	18/01/2017	14		6	4900	8400	53	34	<10	34	<10	170	2800	1.56	0.06	0.20
MW51	18/01/2017	14		5.6	2100	3700	55	<20	<10	<20	<10	120	1100	5.50	0.11	0.08
MW52	18/01/2017	14		6.8	20,000	36,000	30	170	<10	170	<10	1200	12,000	0.18	0.10	0.14
MW55	17/01/2017	14		6.5	640	980	51	110	<10	110	<10	220	89	0.46	2.47	0.50
MW1	15/02/2017	15		7.2	390	540	12	110	<10	110	<10	30	42	0.11	0.71	3.67
MW2	15/02/2017	15		7.2	240	360	<10	100	<10	100	<10	16	31	0.05	0.52	6.25
MW3	15/02/2017	15		6.6	280	390	15	110	<10	110	<10	30	27	0.14	1.11	3.67
MW4	15/02/2017	15		6.7	130	190	13	55	<10	55	<10	<5	19	0.24	0.13	22.00
MW5	15/02/2017	15		5.4	360	360	24	<20	<10	<20	<10	<5	81	2.40	0.03	4.00
MW6	15/02/2017	15		6.6	600	1100	21	92	<10	92	<10	120	190	0.23	0.63	0.77
MW10	15/02/2017	15		7.1	190	260	<10	60	<10	60	<10	15	18	0.08	0.83	4.00
MW11	20/02/2017	15		4.3	190	270	57	<20	<10	<20	<10	43	56	5.70	0.77	0.23
MW12	20/02/2017	15		4.3	130	200	30	<20	<10	<20	<10	27	44	3.00	0.61	0.37
MW26	17/02/2017	15		3.8	340	480	61	<20	<10	<20	<10	39	94	6.10	0.41	0.26
MW27	17/02/2017	15		4	270	200	59	<20	<10	<20	<10	24	29	5.90	0.83	0.42
MW29	17/02/2017	15		4.1	420	410	76	<20	<10	<20	<10	37	92	7.60	0.40	0.27
MW30	17/02/2017	15		6.6	170	190	16	<20	<10	<20	<10	12	30	1.60	0.40	0.83
MW31	21/02/2017	15		4.2	600	680	69	<20	<10	<20	<10	70	140	6.90	0.50	0.14
MW32	21/02/2017	15		5.8	230	320	33	<20	<10	<20	<10	11	84	3.30	0.13	0.91
MW36	16/02/2017	15		6.6	120	99	<10	<20	<10	<20	<10	<5	18	0.50	0.14	4.00
MW37	16/02/2017	15		5.7	110	100	14	<20	<10	<20	<10	5.9	22	1.40	0.27	1.69
MW38	16/02/2017	15		6.8	530	770	35	49	<10	49	<10	50	180	0.71	0.28	0.98
MW39	16/02/2017	15		6.8	770	1100	13	34	<10	34	<10	210	210	0.38	1.00	0.16
MW40	21/02/2017	15		4.6	290	320	45	<20	<10	<20	<10	5.9	93	4.50	0.06	1.69
MW41	21/02/2017	15		3.6	680	670	130	<20	<10	<20	<10	21	170	13.00	0.12	0.48
MW42	21/02/2017	15		4.2	190	200	38	<20	<10	<20	<10	<5	41	3.80	0.06	4.00
MW50	20/02/2017	15		6.3	4700	8500	36	40	<10	40	<10	180	2600	0.90	0.07	0.22
MW51	20/02/2017	15		6.2	2500	4500	61	21	<10	21	<10	180	1400	2.90	0.13	0.12
MW52	20/02/2017	15		7.3	23,000	36,000	28	130	<10	130	<10	1300	13,000	0.22	0.10	0.10
MW55	15/02/2017	15		7	610	930	40	140	<10	140	<10	190	78	0.29	2.44	0.74
MW1	17/03/2017	16		7.3	570	690	31	160	<10	160	<10	39	54	0.19	0.72	4.10
MW2	20/03/2017	16		6.9	370	530	38	100	<10	100	<10	34	79	0.38	0.43	2.94
MW3	20/03/2017	16		6.7	210	280	73	95	<10	95	<10	16	21	0.77	0.76	5.94
MW4	20/03/2017	16		6.4	120	170	43	46	<10	46	<10	<5	23	0.93	0.11	18.40
MW6	13/03/2017	16		5.1	350	610	98	<20	<10	<20	<10	140	88	4.90	1.59	0.07
MW10	17/03/2017	16		6.8	280	310	37	110	<10	110	<10	16	20	0.34	0.80	6.88
MW11	17/03/2017	16		4.2	360	470	80	<20	<10	<20	<10	80	84	4.00	0.95	0.13
MW12	17/03/2017	16		4.3	150	200	38	<20	<10	<20	<10	23	35	1.90	0.66	0.43
MW26	16/03/2017	16		3.9	430	540	76	<20	<10	<20	<10	40	120	3.80	0.33	0.25
MW27	16/03/2017	16		4.4	250	180	59	<20	<10	<20	<10	17	54	2.95	0.31	0.59
MW29	16/03/2017	16		4.8	320	170	65	<20	<10	<20	<10	26	30	3.25	0.87	0.38
MW30	16/03/2017	16		6.4	190	200	22	26	<10	26	<10	11	29	0.85	0.38	2.36
MW36	15/03/2017	16		6.4	110	99	13	<20	<10	<20	<10	<5	17	0.65	0.15	4.00
MW37	15/03/2017	16		6	76	92	19	<20	<10	<20	<10	<5	18	0.95	0.14	4.00
MW38	15/03/2017	16		6.7	370	550	50	55	<10	55	<10	15	120	0.91	0.13	3.67
MW39	15/03/2017	16		6.5	640	930	27	47	<10	47	<10	190	120	0.57	1.58	0.25
MW40	16/03/2017	16		4.2	340	310	58	<20	<10	<20	<10	33	89	2.90	0.37	0.30
MW41	16/03/2017	16		3.6	720	750	120	<20	<10	<20	<10	23	200	6.00	0.12	0.43
MW42	16/03/2017	16		4.3	200	200	42	<20	<10	<20	<10	5.2	54	2.10	0.10	1.92
MW50	14/03/2017	16		6.4	4700	7800	52	31	<10	31	<10	180	2900	1.68	0.06	0.17
MW51	14/03/2017	16		5.3	2500	5300	55	<20	<10	<20	<10	180	1600	2.75	0.11	0.06
MW52	14/03/2017	16		3.7	13,000	22,000	50	<20	<10	<20	<10	650	6900	2.50	0.09	0.02
MW55	20/03/2017	16		6.8	740	1100	83	150	<10	150	<10	230	100	0.55	2.30	0.65
MW1	11/04/2017	17		7.7	490	420	<10	140	<10	140	<10	33	47	0.04	0.70	4.24
MW2	11/04/2017	17		7	380	610	23	91	<10	91	<10	30	79	0.25	0.38	3.03
MW3	11/04/2017	17		6.7	230	360										

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW1	27/01/2016	2		<0.01	1.6	12	0.06	-	1.6	14	0.15	<0.05	48	4.7	21	23	
MW2	27/01/2016	2		0.13	1.2	0.09	<0.02	-	1.1	1.3	0.06	<0.05	17	6.8	28	0.9	
MW3	27/01/2016	2		0.86	1.2	<0.02	0.2	-	0.3	1.4	0.28	0.24	34	2.8	7.8	1.8	
MW4	28/01/2016	2		0.17	0.4	0.39	<0.02	-	0.2	0.8	<0.05	<0.05	17	1.9	15	<0.5	
MW5	28/01/2016	2		0.91	1.3	0.07	<0.02	-	0.4	1.4	0.07	<0.05	1.1	3.9	25	0.8	
MW6	28/01/2016	2		1.50	1.8	0.05	<0.02	-	0.3	1.9	<0.05	<0.05	19	15	46	6.7	
MW10	28/01/2016	2		0.64	1	1.5	0.16	1.7	-	2.7	<0.05	<0.05	36	3.3	12	1.2	
MW11	29/01/2016	2		0.06	0.3	0.02	<0.02	-	0.2	0.3	<0.05	<0.05	0.9	16	62	<0.5	
MW12	29/01/2016	2		0.02	<0.2	<0.02	<0.02	-	<0.2	<0.2	<0.05	<0.05	0.8	3	19	<0.5	
MW26	29/01/2016	2		0.32	1.2	0.03	<0.02	-	0.9	1.2	<0.05	<0.05	7	8.5	36	1.4	
MW27	1/02/2016	2		0.20	0.9	0.02	0.02	-	0.7	0.9	0.06	<0.05	3.6	5.1	16	2.6	
MW28	1/02/2016	2		0.14	1.1	2.1	0.12	-	1	3.3	<0.05	<0.05	3.6	8.1	39	3.2	
MW29	1/02/2016	2		0.22	0.6	<0.02	<0.02	-	0.4	0.6	<0.05	<0.05	7.4	10	29	1.8	
MW30	1/02/2016	2		<0.01	0.6	2.5	<0.02	-	0.6	3.1	0.06	<0.05	4.1	2.4	16	0.5	
MW31	1/02/2016	2		0.23	0.6	<0.02	<0.02	-	0.4	0.6	0.08	<0.05	2.1	3.9	31	1.8	
MW32	1/02/2016	2		0.42	10	<0.02	<0.02	-	10	10	0.89	0.69	10	7.1	92	9	
MW36	2/02/2016	2		0.06	<0.2	3.4	0.03	-	<0.2	3.4	0.14	0.12	15	1.8	7.9	<0.5	
MW37	2/02/2016	2		0.23	0.7	<0.02	<0.02	-	0.5	0.7	0.33	0.28	8.1	2.1	12	1.5	
MW38	2/02/2016	2		0.77	1.9	<0.02	<0.02	-	1.1	1.9	0.68	0.38	28	12	69	17	
MW39	2/02/2016	2		1.40	2	<0.02	<0.02	-	0.6	2	1.1	0.98	17	6.8	38	15	
MW40	3/02/2016	2		0.34	1.8	<0.02	<0.02	<0.05	-	1.8	0.09	0.06	1.4	4.2	34	1.9	
MW41	3/02/2016	2		0.59	0.7	0.03	<0.02	<0.05	-	0.7	0.42	0.53	5.6	13	110	1.3	
MW42	2/02/2016	2		0.27	0.9	<0.02	<0.02	-	0.6	0.9	<0.05	<0.05	1.4	3.9	26	0.9	
MW50	2/02/2016	2		0.22	0.2	0.12	<0.02	-	<0.2	0.3	0.32	<0.05	31	170	1500	34	
MW51	2/02/2016	2		0.17	0.2	<0.02	<0.02	-	<0.2	0.2	<0.05	<0.05	13	57	410	7.2	
MW52	2/02/2016	2		0.01	1.7	43	0.25	-	1.7	45	<0.05	<0.05	260	1100	6400	160	
MW55	3/02/2016	2		-	-	-	-	-	-	-	-	-	68	12	71	14	
MW1	16/02/2016	3		<0.01	1.3	8	<0.02	-	1.3	9.3	0.1	<0.05	47	5.1	23	25	
MW2	16/02/2016	3		0.20	0.6	<0.02	<0.02	-	0.4	0.6	0.08	<0.05	14	7.4	22	1.1	
MW3	16/02/2016	3		0.28	2.9	0.15	<0.02	-	2.6	3.1	0.48	<0.05	39	3.5	8.9	1.9	
MW4	16/02/2016	3		0.19	1.4	0.17	0.19	-	1.2	1.8	0.26	<0.05	17	2.2	7.6	<0.5	
MW5	23/02/2016	3		0.81	1.3	<0.02	0.05	0.07	-	1.4	<0.05	<0.05	1.1	4.6	25	0.8	
MW6	16/02/2016	3		0.73	1.2	0.33	<0.02	-	0.5	1.5	0.13	<0.05	13	15	35	5.2	
MW10	23/02/2016	3		0.55	0.5	2.6	<0.02	2.6	-	3.1	<0.05	<0.05	40	5.1	13	1.9	
MW11	23/02/2016	3		0.10	0.3	0.06	<0.02	0.06	-	0.4	<0.05	<0.05	1.4	27	80	0.7	
MW12	23/02/2016	3		0.04	<0.2	0.09	<0.02	0.09	-	<0.2	<0.05	<0.05	1	4.5	28	0.7	
MW26	19/02/2016	3		0.35	2.4	<0.02	<0.02	-	2	2.4	<0.05	-	3.4	8.4	35	3.6	
MW27	19/02/2016	3		0.26	1.2	<0.02	<0.02	-	0.9	1.2	<0.05	-	3.2	5.7	15	2.8	
MW28	19/02/2016	3		0.17	1.3	3.2	0.12	-	1.1	4.5	<0.05	-	3.1	8.5	35	3.5	
MW29	22/02/2016	3		0.23	1	<0.02	<0.02	<0.05	-	1	<0.05	<0.05	7.5	11	29	2.2	
MW30	22/02/2016	3		0.02	<0.2	2.6	<0.02	2.6	-	2.6	0.06	<0.05	3.5	2.8	15	0.8	
MW31	22/02/2016	3		0.21	1	<0.02	<0.02	<0.05	-	1	0.18	<0.05	3.3	5.1	33	2.4	
MW32	22/02/2016	3		0.40	1.7	<0.02	<0.02	<0.05	-	1.7	0.41	0.38	8.8	6.2	62	6	
MW36	22/02/2016	3		0.03	0.3	2.4	0.03	2.5	-	2.8	0.13	0.12	12	1.8	7.2	0.5	
MW37	22/02/2016	3		1.00	2.4	<0.02	<0.02	<0.05	-	2.4	0.66	0.44	8.4	2.5	11	2.1	
MW38	22/02/2016	3		0.83	2.7	<0.02	<0.02	<0.05	-	2.7	0.58	0.36	22	9.9	66	15	
MW39	22/02/2016	3		1.30	1.3	<0.02	<0.02	<0.05	-	1.3	1	1.1	18	7.5	38	17	
MW40	18/02/2016	3		0.34	0.7	<0.02	<0.02	<0.05	-	0.7	<0.05	<0.05	1.6	4.8	33	1.9	
MW41	18/02/2016	3		0.54	4.1	<0.02	<0.02	<0.05	-	4.1	0.28	0.28	<5	11	95	<5	
MW42	22/02/2016	3		0.28	0.7	<0.02	<0.02	<0.05	-	0.7	<0.05	<0.05	1.6	4.4	24	1	
MW50	24/02/2016	3		0.22	2	<0.02	<0.02	<0.05	-	2	0.11	<0.05	29	170	1300	36	
MW51	24/02/2016	3		0.15	1.7	<0.02	<0.02	<0.05	-	1.7	0.46	<0.05	11	50	380	8.9	
MW52	24/02/2016	3		0.01	1.2	39	0.68	40	-	41	0.49	<0.05	160	700	6300	130	
MW55	17/02/2016	3		0.04	0.7	0.09	<0.02	0.09	-	0.8	<0.05	<0.05	66	11	73	13	
MW1	15/03/2016	4		<0.01	1.7	15	0.03	15	-	17	0.06	<0.05	56	6.3	30	36	
MW2	15/03/2016	4		0.23	0.5	<0.02	<0.02	<0.05	-	0.5	<0.05	<0.05	6.9	6.9	15	1.1	
MW3	15/03/2016	4		4.30	7.2	<0.02	<0.02	<0.05	-	7.2	1.1	0.64	33	3.3	9.2	1.8	
MW4	15/03/2016	4		0.08	0.4	0.1	0.05	0.15	-	0.6	<0.05	<0.05	14	1.6	4.9	<0.5	
MW5	15/03/2016	4		0.85	1.7	0.06	<0.02	0.06	-	1.8	<0.05	<0.05	0.9	5	22	0.8	
MW6	15/03/2016	4		0.61	1.2	0.1	<0.02	0.1	-	1.3	<0.05	<0.05	2.7	7	18	3.4	
MW10	17/03/2016	4		0.70	1.6	2.5	0.09	-	0.9	4.2	0.08	<0.05	28	5	11	1.7	
MW11	17/03/2016	4		0.10	0.3	<0.02	<0.02	-	0.2	0.3	<0.05	<0.05	2.5	25	95	0.7	
MW12	17/03/2016	4		<0.01	<0.2	<0.02	<0.02	-	<0.2	<0.2	<0.05	<0.05	0.7	4.5	23	0.5	
MW26	17/03/2016	4		0.32	1.5	<0.02	<0.02	-	1.2	1.5	<0.05	<0.05	5.9	8.5	39	1.6	
MW27	17/03/2016	4		0.17	1	<0.02	<0.02	-	0.8	1	<0.05	<0.05	2.1	5	14	3.1	
MW28	17/03/2016	4		0.09	0.3	4.5	0.02	-	0.2	4.8	<0.05	<0.05	2.3	5.6	28	2.7	
MW29	18/03/2016	4		0.20	0.7	0.08	<0.02	0.09	-	0.8	&						

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW1	11/04/2016	5		<0.01	1.8	15	0.04	-	1.8	17	<0.05	<0.05	58	7.8	36	37	
MW2	11/04/2016	5		0.22	0.9	<0.02	<0.02	-	0.7	0.9	<0.05	<0.05	7.3	9.2	16	1.1	
MW3	11/04/2016	5		1.40	3.7	<0.02	<0.02	-	2.3	3.7	0.4	<0.05	34	2.9	9.6	1.5	
MW4	11/04/2016	5		1.00	1.4	0.05	<0.02	-	0.4	1.4	0.15	0.13	16	1.6	5.6	<0.5	
MW5	11/04/2016	5		0.86	2.1	<0.02	<0.02	-	1.2	2.1	<0.05	<0.05	1	4.2	22	0.7	
MW6	11/04/2016	5		0.68	1.7	<0.02	<0.02	-	1	1.7	<0.05	<0.05	2.5	7	20	3.2	
MW10	11/04/2016	5		0.90	3	0.27	0.05	-	2.1	3.3	<0.05	<0.05	19	4	12	1.6	
MW11	15/04/2016	5		0.12	<0.2	0.02	<0.02	-	<0.2	<0.2	<0.05	<0.05	3.2	30	85	0.9	
MW12	15/04/2016	5		0.02	<0.2	<0.02	<0.02	-	<0.2	<0.2	<0.05	<0.05	<0.5	2.9	19	<0.5	
MW26	15/04/2016	5		0.29	0.7	0.03	<0.02	-	0.5	0.7	<0.05	<0.05	6.8	11	49	1.7	
MW27	15/04/2016	5		0.19	0.8	<0.02	<0.02	-	0.6	0.8	<0.05	<0.05	2.6	6.2	17	3.4	
MW28	15/04/2016	5		0.10	<0.2	3.2	<0.02	-	<0.2	3.2	<0.05	<0.05	2.7	8.3	37	3.2	
MW29	14/04/2016	5		0.24	2.1	<0.02	<0.02	-	1.9	2.1	<0.05	<0.05	7	11	32	5.1	
MW30	14/04/2016	5		0.03	0.9	2.8	<0.02	-	0.9	3.7	0.06	<0.05	3.9	2.5	19	0.7	
MW31	14/04/2016	5		0.22	2.7	<0.02	0.02	-	2.5	2.7	0.08	<0.05	2.4	5.2	40	2.1	
MW32	14/04/2016	5		0.38	2	<0.02	<0.02	-	1.6	2	0.46	0.37	7.5	7.1	66	9.5	
MW36	13/04/2016	5		<0.01	0.4	4.4	0.05	-	0.4	4.9	0.11	0.1	13	1.8	7.6	0.5	
MW37	13/04/2016	5		0.39	1.9	1.8	<0.02	-	1.5	3.7	0.31	0.27	6.5	2.4	9.8	1.4	
MW38	13/04/2016	5		0.75	3.9	<0.02	<0.02	-	3.1	3.9	0.51	0.47	20	9.8	65	14	
MW39	13/04/2016	5		1.40	3	0.05	<0.02	-	1.6	3.1	0.81	0.81	21	7.3	35	16	
MW40	14/04/2016	5		0.35	6.2	0.7	<0.02	-	5.8	6.9	0.56	0.54	5.2	12	88	1.9	
MW41	14/04/2016	5		0.42	1.7	0.02	<0.02	-	1.3	1.7	<0.05	<0.05	2.1	5.4	42	2	
MW42	12/04/2016	5		0.28	0.3	<0.02	<0.02	<0.05	-	0.3	<0.05	<0.05	1.6	4.4	28	1	
MW50	12/04/2016	5		0.28	0.3	0.04	<0.02	<0.05	-	0.3	<0.05	<0.05	27	160	1500	37	
MW51	12/04/2016	5		0.22	0.2	<0.02	<0.02	<0.05	-	0.2	<0.05	<0.05	11	49	400	11	
MW52	12/04/2016	5		0.10	1.6	44	<0.2	44	-	46	0.17	0.16	150	680	5300	120	
MW55	11/04/2016	5		-	-	-	-	-	-	-	-	-	70	11	95	14	
MW1	9/05/2016	6		0.05	1.7	6.3	0.1	6.4	1.6	8.1	0.12	<0.05	29	4.5	25	34	
MW2	9/05/2016	6		0.26	0.6	<0.02	<0.02	<0.05	0.3	0.6	<0.05	<0.05	8.2	8.9	17	1.4	
MW3	9/05/2016	6		0.14	1.6	<0.02	<0.02	<0.05	1.5	1.6	0.24	<0.05	33	3.1	8	1.9	
MW4	9/05/2016	6		0.61	1.6	<0.02	<0.02	<0.05	1	1.6	0.38	0.13	14	1.8	5.9	<0.5	
MW5	2/05/2016	6		0.83	1.3	<0.02	<0.02	<0.05	0.5	1.3	0.06	<0.05	1.1	4.6	22	0.8	
MW6	2/05/2016	6		0.66	1.2	<0.02	<0.02	<0.05	0.5	1.2	0.12	<0.05	2.9	7.5	22	3.4	
MW10	6/05/2016	6		1.00	3.2	0.03	<0.02	<0.05	2.2	3.2	0.13	<0.05	14	3.9	9.8	1.6	
MW11	6/05/2016	6		0.11	0.4	<0.02	0.02	<0.05	0.3	0.4	<0.05	<0.05	2.3	24	72	0.8	
MW12	6/05/2016	6		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	1.2	6.3	26	0.8	
MW26	6/05/2016	6		0.27	<2	0.04	0.03	0.08	<2	<0.2	0.07	<0.05	4.3	6.6	32	1.6	
MW27	6/05/2016	6		0.20	0.7	<0.02	0.03	<0.05	0.5	0.7	0.06	<0.05	2.3	6.2	13	3	
MW28	6/05/2016	6		0.13	0.6	2.6	<0.02	2.6	0.5	3.2	<0.05	<0.05	2.4	6.5	33	2.6	
MW29	3/05/2016	6		0.25	1.5	0.03	<0.02	<0.05	-	1.5	0.72	<0.05	7	11	33	2.2	
MW30	3/05/2016	6		<0.01	0.5	2.8	<0.02	2.8	-	3.3	0.31	<0.05	3.6	2.1	20	0.8	
MW31	3/05/2016	6		0.18	0.7	<0.02	<0.02	<0.05	-	0.7	0.53	<0.05	2.1	4.5	40	2.2	
MW32	3/05/2016	6		0.29	1.4	<0.02	<0.02	<0.05	-	1.4	0.69	0.32	7.3	7.6	68	5.5	
MW36	5/05/2016	6		0.02	<0.2	3.9	<0.02	3.9	<0.2	3.9	0.15	0.09	10	1.8	5.3	0.8	
MW37	5/05/2016	6		0.16	1	1.4	<0.02	1.4	0.84	2.4	0.29	0.2	5.6	2.1	6.6	1.8	
MW38	5/05/2016	6		0.51	4.7	0.06	<0.02	0.06	4.2	4.8	0.34	0.05	230	110	520	51	
MW39	5/05/2016	6		0.40	1.8	<0.02	<0.02	<0.05	1.4	1.8	0.82	0.53	18	5.8	45	10	
MW40	5/05/2016	6		0.39	1.2	0.03	<0.02	<0.05	0.8	1.2	<0.05	<0.05	2.2	5.6	36	1.8	
MW41	5/05/2016	6		0.35	3	2.4	0.12	2.5	2.6	5.5	0.7	0.52	5.7	13	98	2	
MW42	5/05/2016	6		0.72	1.8	<0.02	<0.02	<0.05	1.1	1.8	0.13	0.05	1.6	4.3	23	1.4	
MW50	4/05/2016	6		0.25	0.3	0.02	<0.02	<0.05	<0.2	0.3	<0.05	<0.05	29	180	1400	38	
MW51	4/05/2016	6		0.13	0.4	0.03	<0.02	<0.05	0.3	0.4	0.1	<0.05	13	62	450	11	
MW52	4/05/2016	6		0.07	10	35	0.08	35	10	45	0.28	0.21	190	920	6400	130	
MW55	9/05/2016	6		1.20	2.1	<0.02	<0.02	<0.05	0.9	2.1	<0.05	<0.05	53	7.6	79	14	
MW1	28/06/2016	7		0.02	<0.2	2.8	<0.02	2.8	<0.2	2.8	0.09	<0.05	29	3.1	17	18	
MW2	27/06/2016	7		0.25	0.7	<0.02	<0.02	<0.05	0.4	0.7	<0.05	<0.05	10	7.8	32	0.9	
MW3	27/06/2016	7		0.21	1.3	2.6	<0.02	2.6	1.1	3.9	<0.05	<0.05	41	4.1	13	1.4	
MW4	28/06/2016	7		0.64	1.2	1.5	0.04	1.5	1.5	3.6	0.21	0.1	24	1.7	9.5	<0.5	
MW5	28/06/2016	7		0.61	1.4	<0.02	<0.02	<0.05	1	1.6	<0.05	<0.05	1.3	4.2	22	1.1	
MW6	28/06/2016	7		0.3	0.7	0.45	<0.02	0.45	0.4	1.2	<0.05	<0.05	12	7.1	22	3.9	
MW10	24/06/2016	7		0.23	1.3	4.4	<0.02	4.4	1.1	5.7	<0.05	<0.05	31	3	10	1.1	
MW11	24/06/2016	7		0.14	0.4	0.05	<0.02	0.05	0.3	0.5	<0.05	<0.05	2.3	26	90	<0.5	
MW12	24/06/2016	7		0.05	0.3	0.02	<0.02	<0.05	0.2	0.3	<0.05	<0.05	2	9.3	33	0.8	
MW26	27/06/2016	7		0.1	0.9	2.4	<0.02	2.4	0.8	3.3	<0.05	<0.05	2.9	3.2	17	1.6	
MW27	27/06/2016	7		0.22	0.8	<0.02	<0.02	<0.05	0.6	0.8	<0.05	<0.05	3.2	5.4	16	2.4	
MW29	23/06/2016	7		0.24	2	0.03	0.02	0.05	1.8	2.1	0.13	<0.05					

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW1	19/07/2016	8		0.05	0.7	0.38	<0.02	0.39	0.6	1.1	0.08	<0.05	17	3.2	22	18	
MW2	19/07/2016	8		0.07	0.3	3.8	<0.02	3.8	0.2	4.1	<0.05	<0.05	28	4.9	15	1.1	
MW3	19/07/2016	8		0.55	3.6	1.8	0.02	1.8	3	5.4	0.25	<0.05	38	5.8	14	1.8	
MW4	19/07/2016	8		0.12	1.1	3	0.03	3	1	4.1	0.1	<0.05	24	2.2	10	<0.5	
MW5	18/07/2016	8		0.15	1.8	1	0.05	1.1	1.6	2.9	0.09	<0.05	3.1	3.1	28	9.1	
MW6	18/07/2016	8		0.33	1.1	1.8	<0.02	1.8	0.8	2.9	0.07	<0.05	13	7.4	26	6.3	
MW10	18/07/2016	8		0.65	1.5	3	<0.02	3	0.8	4.5	0.14	<0.05	25	3.7	14	1.8	
MW11	15/07/2016	8		0.07	0.4	0.12	<0.02	0.13	0.3	0.5	<0.05	<0.05	1.6	26	77	<0.5	
MW12	15/07/2016	8		0.04	0.3	0.03	<0.02	<0.05	0.3	0.3	<0.05	<0.05	1	7.9	34	0.7	
MW26	19/07/2016	8		0.02	<0.2	0.94	<0.02	0.95	<0.2	1	0.07	<0.05	2	2.1	12	2.3	
MW27	19/07/2016	8		0.46	1.5	<0.02	<0.02	<0.05	1	1.5	0.14	<0.05	3.2	5.7	19	3.7	
MW28	19/07/2016	8		0.33	2.9	2.3	0.09	2.3	2.6	5.2	0.21	<0.05	3.4	8.5	35	3.9	
MW29	14/07/2016	8		0.24	0.3	<0.02	0.03	<0.05	<0.2	0.3	<0.05	0.13	6.1	10	26	1.6	
MW30	14/07/2016	8		0.07	<0.2	1.4	<0.02	1.4	<0.2	1.4	0.12	0.06	2.7	2.8	19	0.8	
MW31	14/07/2016	8		0.11	3.5	1.7	0.04	1.8	3.4	5.3	1.1	0.96	13	10	55	3	
MW32	14/07/2016	8		0.4	3.4	0.03	<0.02	<0.05	3	3.4	1.2	1.2	13	11	120	13	
MW36	14/07/2016	8		<0.01	1.1	3.4	<0.02	3.4	1.1	4.5	0.15	0.13	15	1.8	6.4	0.6	
MW37	14/07/2016	8		0.2	<0.2	0.44	<0.02	0.46	<0.2	0.5	0.25	0.15	5.3	1.9	9.6	0.9	
MW38	14/07/2016	8		0.64	8.4	<0.02	<0.02	<0.05	7.8	8.4	0.39	0.14	180	88	470	50	
MW39	14/07/2016	8		0.29	1.7	<0.02	<0.02	<0.05	1.4	1.7	1.1	0.87	17	6.6	50	14	
MW40	13/07/2016	8		0.33	1	0.03	<0.02	<0.05	0.67	1	<0.05	<0.05	2.4	5.6	41	1.8	
MW41	13/07/2016	8		1.1	6.3	1.9	0.1	2	5.2	8.3	0.92	0.92	14	23	140	2.9	
MW42	13/07/2016	8		0.24	0.8	<0.02	<0.02	<0.05	0.56	0.8	<0.05	<0.05	1.4	4	24	1	
MW50	12/07/2016	8		0.84	0.84	0.05	<0.02	0.06	<0.2	0.9	0.28	<0.05	31	180	1500	36	
MW51	12/07/2016	8		0.1	0.8	0.08	<0.02	0.1	0.7	0.9	0.25	<0.05	20	79	530	22	
MW52	12/07/2016	8		0.18	110	44	<0.02	44	110	150	1.7	0.73	81	350	2600	60	
MW55	19/07/2016	8		0.53	1.3	0.11	0.02	0.14	0.8	1.4	<0.05	<0.05	36	6.5	70	13	
MW1	25/08/2016	9		0.02	<0.2	2.8	<0.02	2.8	<0.2	2.8	0.11	0.06	27	3.7	21	22	
MW2	24/08/2016	9		0.03	0.4	1.6	<0.02	1.6	0.4	2	<0.05	<0.05	40	2.6	13	<0.5	
MW3	24/08/2016	9		0.62	1.5	2.5	0.03	2.5	0.9	4	<0.05	<0.05	33	4.7	9.3	1.4	
MW4	24/08/2016	9		0.03	2.1	5.4	<0.02	5.4	2.1	7.5	<0.05	<0.05	32	2.5	8.3	<0.5	
MW5	24/08/2016	9		0.15	3.7	0.9	0.08	0.98	3.5	4.7	0.08	<0.05	13	3.7	20	12	
MW6	24/08/2016	9		0.18	1.2	6.5	<0.02	6.5	1	7.7	<0.05	<0.05	39	16	65	15	
MW10	23/08/2016	9		0.03	0.3	5.9	<0.02	5.9	0.3	6.2	<0.05	<0.05	31	3	12	1.8	
MW11	23/08/2016	9		0.02	0.3	2.3	<0.02	2.3	0.3	2.6	<0.05	<0.05	1.4	12	45	<0.5	
MW12	23/08/2016	9		0.02	<0.2	0.07	<0.02	0.07	<0.2	<0.2	<0.05	<0.05	1.9	7.4	35	0.7	
MW26	19/08/2016	9		0.02	<0.2	0.43	<0.02	0.44	<0.2	0.4	<0.05	<0.05	1.3	1.4	11	1.8	
MW27	19/08/2016	9		0.24	0.3	<0.02	<0.02	<0.05	<0.2	0.3	0.06	<0.05	5	8.8	22	4.1	
MW29	19/08/2016	9		0.2	<1	<0.02	<0.02	<0.05	<1	<0.2	0.06	<0.05	6.5	12	41	1.9	
MW30	19/08/2016	9		0.02	0.7	2.2	<0.02	2.2	0.7	2.9	<0.05	<0.05	8.4	2.5	17	<0.5	
MW31	19/08/2016	9		0.13	7.5	0.03	<0.02	<0.05	7.4	7.5	1.1	0.99	12	6.9	42	7.5	
MW32	19/08/2016	9		0.31	3	<0.02	<0.02	<0.05	2.7	3	0.8	0.7	11	9.6	92	9.6	
MW36	15/08/2016	9		0.02	0.7	3.4	<0.02	3.4	0.7	4.1	0.09	0.09	18	2.1	7.5	0.5	
MW37	15/08/2016	9		0.4	1.1	0.09	<0.02	0.09	0.7	1.2	0.39	0.19	5.2	1.8	12	1.2	
MW38	15/08/2016	9		0.54	3	<0.02	<0.02	<0.05	2.5	3	0.43	0.38	56	29	210	24	
MW39	15/08/2016	9		0.11	2.7	<0.02	<0.02	<0.05	2.6	2.7	0.71	0.71	16	7.1	46	10	
MW40	15/08/2016	9		0.36	0.9	<0.02	<0.02	<0.05	0.6	0.9	0.13	<0.05	4	7.9	48	1.6	
MW42	15/08/2016	9		0.28	0.7	0.02	<0.02	<0.05	0.4	0.7	0.08	<0.05	1.4	3.7	24	0.8	
MW50	15/08/2016	9		0.39	0.4	0.03	<0.02	<0.05	<0.2	0.4	0.62	<0.05	31	200	1400	42	
MW51	15/08/2016	9		0.29	1.1	0.03	<0.02	<0.05	0.8	1.1	0.27	0.22	21	100	640	21	
MW52	15/08/2016	9		0.06	1.5	39	0.06	39	1.4	41	0.64	0.24	200	1000	6500	150	
MW55	24/08/2016	9		0.64	0.9	0.68	<0.02	0.7	0.3	1.6	0.08	<0.05	41	7.4	68	14	
MW1	29/09/2016	10		<0.01	0.3	3	<0.02	3	0.3	3.3	0.08	<0.05	23	2.9	19	19	
MW2	4/10/2016	10		0.01	0.6	0.87	<0.02	0.87	0.5	1.4	0.08	<0.05	63	2.3	1.3	22	
MW3	22/09/2016	10		0.05	6.3	2	<0.02	2	6.25	8.3	0.1	<0.05	31	4.4	1.6	9.4	
MW4	4/10/2016	10		0.02	<0.2	4.5	<0.02	4.5	<0.2	4.5	0.06	<0.05	38	2.7	<0.5	7.5	
MW5	29/09/2016	10		0.13	1.3	<0.02	0.04	<0.05	1.2	1.3	0.06	<0.05	10	2.8	3.2	13	
MW6	29/09/2016	10		0.21	3.6	31	0.02	32	3.4	36	0.03	<0.05	120	25	33	130	
MW10	22/09/2016	10		0.04	14	6	<0.02	6	13.96	20	0.14	<0.05	36	3.5	1.3	10	
MW11	23/09/2016	10		0.05	<0.2	1.5	<0.02	1.5	<0.2	1.5	<0.05	<0.05	0.7	11	<0.5	37	
MW12	23/09/2016	10		0.03	0.2	0.07	<0.02	0.07	0.2	0.3	<0.05	<0.05	1.7	5.5	<0.5	29	
MW26	29/09/2016	10		0.13	1.1	0.72	0.03	0.75	1	1.9	<0.05	<0.05	3.5	6.5	0.9	33	
MW27	29/09/2016	10		0.31	0.9	<0.02	<0.02	<0.05	0.6	0.9	<0.05	<0.05	3.6	4	1.8	18	
MW29	27/09/2016	10		0.33	2.2	0.03	<0.02	<0.05	1.87	2.2	0.29	0.11	5.3	11	1.8	35	
MW30	27/09/2016	10		0.04	1.7	1.8	<0.02	1.8	1.66	3.5	0.19	<0.05	7.4	2.5	0.7	17	
MW31	27/09/2016	10		0.18	6.1</												

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW1	24/10/2016	11		0.02	1.2	7.7	<0.02	7.8	1.2	9	0.12	0.07	36	3.8	22	20	
MW2	1/11/2016	11		<0.01	0.7	0.92	<0.02	0.92	0.7	1.6	<0.05	<0.05	59	2.3	<0.5	24	
MW3	1/11/2016	11		0.15	1.6	0.95	0.02	0.97	1.5	2.6	<0.05	<0.05	30	4.9	1.6	11	
MW4	31/10/2016	11		0.02	1.8	3.7	<0.02	3.7	1.8	5.5	<0.05	<0.05	33	2.4	<0.5	8	
MW5	24/10/2016	11		0.05	1.4	<0.02	<0.02	<0.05	1.3	1.4	0.06	<0.05	6.8	3.2	1.1	9.3	
MW6	24/10/2016	11		0.25	2.4	5.9	<0.02	6	2.2	8.4	0.13	<0.05	58	25	25	110	
MW10	31/10/2016	11		0.02	2.5	4	<0.02	4	2.5	6.5	<0.05	<0.05	39	3.8	0.9	9.6	
MW11	31/10/2016	11		0.05	0.8	0.67	<0.02	0.68	0.8	1.5	<0.05	<0.05	1.1	27	<0.5	73	
MW12	31/10/2016	11		0.01	0.4	0.37	<0.02	0.37	0.4	0.8	<0.05	<0.05	1.8	5.8	<0.5	26	
MW26	28/10/2016	11		0.21	1.6	0.29	<0.02	0.3	1.4	1.9	<0.05	<0.05	6.9	11	1.8	50	
MW27	28/10/2016	11		0.12	1.6	<0.02	<0.02	<0.05	1.5	1.6	0.05	<0.05	4	18	8.7	33	
MW29	28/10/2016	11		0.21	2.2	<0.02	0.04	<0.05	2	2.2	<0.05	<0.05	6.8	14	2.2	39	
MW30	28/10/2016	11		0.02	1.5	6.9	<0.02	7	1.5	8.5	<0.05	<0.05	43	4.1	1.1	24	
MW31	28/10/2016	11		0.18	1.3	<0.02	0.04	<0.05	1.1	1.3	1.9	1.9	13	7.5	7.1	46	
MW32	28/10/2016	11		0.28	4.3	<0.02	<0.02	<0.05	4	4.3	1.1	1.1	11	9.5	12	100	
MW36	26/10/2016	11		0.02	0.9	3.5	<0.02	3.5	0.8	4.4	<0.05	0.12	12	1.3	<0.5	4.6	
MW37	26/10/2016	11		0.13	1.8	<0.02	0.03	<0.05	1.7	1.8	0.11	0.14	4.9	1.8	1	12	
MW38	26/10/2016	11		0.7	2.3	<0.02	0.03	<0.05	1.6	2.3	0.67	0.75	25	13	18	80	
MW39	26/10/2016	11		0.57	1.9	<0.02	0.04	<0.05	1.3	1.9	1	1	16	7.1	11	47	
MW40	26/10/2016	11		0.29	1.2	<0.02	0.05	<0.05	0.9	1.2	<0.05	<0.05	2.7	7.4	1.8	49	
MW41	26/10/2016	11		0.67	5.6	<0.02	<0.02	<0.05	4.9	5.6	0.6	0.95	9.1	12	3	120	
MW42	26/10/2016	11		0.27	1.6	<0.02	<0.02	<0.05	<1	1.6	<0.05	<0.05	1.4	4.1	1.1	28	
MW50	24/10/2016	11		0.2	1.6	0.92	<0.02	0.93	1.4	2.5	0.21	<0.05	31	190	40	1700	
MW51	25/10/2016	11		0.14	1.9	<0.02	<0.02	<0.05	1.8	1.9	0.56	0.44	29	130	27	810	
MW52	24/10/2016	11		0.42	3.4	25	0.23	25	3	28	0.49	0.46	140	650	110	4700	
MW55	1/11/2016	11		0.1	1	2.8	0.03	2.9	0.9	3.9	<0.05	<0.05	73	13	20	71	
MW1	22/11/2016	12		0.02	<0.2	12	<0.02	12	<0.2	12	<0.05	<0.05	55	5.8	22	27	
MW2	22/11/2016	12		0.03	1	0.6	<0.02	0.6	1	1.6	<0.05	<0.05	75	3.9	46	<0.5	
MW3	22/11/2016	12		0.11	0.5	0.83	<0.02	0.83	0.4	1.3	<0.05	<0.05	38	4.7	9.1	1.8	
MW4	22/11/2016	12		0.14	0.8	3.1	0.02	3.1	0.7	3.9	<0.05	<0.05	33	2.2	6.8	<0.5	
MW5	22/11/2016	12		0.03	4.5	<0.02	<0.02	<0.05	4.5	4.5	<0.05	<0.05	7.1	4.2	11	0.6	
MW6	22/11/2016	12		0.14	0.6	1.4	<0.02	1.4	0.5	2	<0.05	<0.05	28	15	54	13	
MW10	25/11/2016	12		<0.01	6.4	3.6	<0.02	3.6	6.4	10	<0.05	<0.05	44	3.8	8.6	0.8	
MW11	25/11/2016	12		<0.01	0.5	2.4	<0.02	2.4	0.5	2.9	<0.05	<0.05	0.7	2.7	15	<0.5	
MW12	25/11/2016	12		<0.01	<0.2	1.1	<0.02	1.1	<0.2	1.1	<0.05	<0.05	0.8	4.5	28	<0.5	
MW26	25/11/2016	12		0.16	2.6	0.55	<0.02	0.56	2.4	3.2	<0.05	<0.05	8.2	13	69	1.8	
MW27	25/11/2016	12		0.21	1.6	<0.02	0.02	<0.05	1.4	1.6	<0.05	<0.05	1.9	14	38	7.6	
MW29	24/11/2016	12		0.18	1.7	<0.02	<0.02	<0.05	1.5	1.7	<0.05	<0.05	6.4	11	32	2.1	
MW30	24/11/2016	12		0.04	1.8	3.7	<0.02	3.7	1.8	5.5	0.06	<0.05	27	2.6	21	0.6	
MW31	24/11/2016	12		0.46	8.9	<0.02	<0.02	<0.05	8.5	8.9	2.6	2.1	11	5.5	42	8.3	
MW32	24/11/2016	12		0.34	2.1	<0.02	<0.02	<0.05	1.8	2.1	0.74	0.54	8.1	7.5	72	10	
MW36	24/11/2016	12		0.01	1.6	2.5	<0.02	2.5	1.6	4.1	0.13	0.09	14	2	12	<0.5	
MW37	24/11/2016	12		0.38	2.4	<0.02	0.02	<0.05	2	2.4	0.72	0.21	2.4	0.9	18	0.9	
MW38	24/11/2016	12		0.61	1.9	<0.02	<0.02	<0.05	1.3	1.9	0.87	0.69	18	9.2	61	16	
MW39	24/11/2016	12		0.38	0.4	<0.02	<0.02	<0.05	<0.2	0.4	1.1	1.1	14	6.3	46	18	
MW40	28/11/2016	12		0.28	1.3	<0.02	<0.02	<0.05	1	1.3	<0.05	<0.05	2.2	6.7	47	1.6	
MW41	28/11/2016	12		0.33	6.1	<0.02	<0.02	<0.05	5.8	6.1	0.99	0.83	6.6	6.2	75	1.2	
MW42	28/11/2016	12		0.35	0.9	<0.02	<0.02	<0.05	0.5	0.9	<0.05	<0.05	1.3	4	27	0.8	
MW50	23/11/2016	12		0.16	0.3	0.03	<0.02	<0.05	0.2	0.3	<0.05	<0.05	30	170	1400	36	
MW51	23/11/2016	12		0.15	0.2	0.03	<0.02	<0.05	0.5	0.7	<0.05	<0.05	23	120	760	16	
MW52	23/11/2016	12		0.19	0.8	27	0.12	28	0.7	29	0.31	0.27	150	650	5400	110	
MW55	22/11/2016	12		0.4	1.2	2.6	0.05	2.6	0.8	3.8	<0.05	<0.05	72	13	75	18	
MW1	13/12/2016	13		0.02	2.7	23	<0.02	23	2.7	26	0.34	0.07	74	7.2	21	27	
MW2	13/12/2016	13		<0.01	1.4	0.46	<0.02	0.46	1.4	1.9	0.25	<0.05	77	7.1	66	0.5	
MW3	13/12/2016	13		0.08	0.7	0.37	<0.02	0.39	0.6	1.1	<0.05	<0.05	50	5.9	10	2.1	
MW4	13/12/2016	13		0.03	1.1	0.86	0.04	0.9	1.1	2	<0.05	<0.05	31	2.1	13	<0.5	
MW5	13/12/2016	13		0.04	1.5	<0.02	<0.02	<0.05	1.5	1.5	<0.05	<0.05	15	12	30	1.3	
MW6	13/12/2016	13		0.83	1.1	<0.02	<0.02	<0.05	0.3	1.1	<0.05	<0.05	7	18	40	6.3	
MW10	13/12/2016	13		<0.01	0.8	2.9	<0.02	3	0.8	3.8	<0.05	<0.05	51	4.1	7.3	0.9	
MW11	16/12/2016	13		<0.01	<0.2	2	<0.02	2	<0.2	2	0.06	<0.05	0.6	8.5	39	<0.5	
MW12	16/12/2016	13		0.02	0.4	0.04	<0.02	<0.05	0.4	0.4	<0.05	<0.05	1.1	5.7	26	<0.5	
MW26	16/12/2016	13		0.1	1.4	0.79	<0.02	0.8	1.3	2.2	0.08	<0.05	11	15	88	2.4	
MW27	16/12/2016	13		0.21	1.5	<0.02	<0.02	<0.05	1.3	1.5	0.7	<0.05	3.1	8.8	23	3.7	
MW29	19/12/2016	13		0.19	2.3	<0.02	<0.02	<0.05	2.1	2.3	0.08	<0.05	7	12	41	2.1	
MW30	19/12/2016	13		0.06	0.6	3.5	<0.02	3.5	0.6	4.1	0.06						

Table 5
Groundwater Analytical Results
Nutrients and Major Cations
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR				0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	
1. ANZECC FW 95%				0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	
2. DER 2015				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
MW1	17/01/2017	14		0.05	2.1	13	0.03	13	15	2	0.12	0.07	60	6.6	35	22	
MW2	17/01/2017	14		0.02	0.9	0.17	<0.02	0.18	1.1	0.9	0.1	<0.05	50	7.8	69	0.8	
MW3	17/01/2017	14		0.11	0.8	1.4	0.07	1.4	2.2	0.7	0.07	<0.05	50	6.8	15	3	
MW4	17/01/2017	14		0.02	0.6	0.03	<0.02	<0.05	0.6	0.6	0.06	<0.05	20	2.1	15	<0.5	
MW5	17/01/2017	14		0.62	1.1	<0.02	<0.02	<0.05	1.1	0.5	0.11	<0.05	1.8	5.3	26	1	
MW6	17/01/2017	14		0.17	0.8	0.5	<0.02	0.51	1.3	0.6	<0.05	<0.05	25	27	150	21	
MW10	24/01/2017	14		0.1	0.9	0.48	<0.02	0.49	1.4	0.8	<0.05	<0.05	42	3.8	8.5	1	
MW11	24/01/2017	14		0.02	<0.2	0.12	<0.02	0.12	<0.2	<0.2	<0.05	<0.05	<0.5	10	35	<0.5	
MW12	24/01/2017	14		0.03	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	0.8	5.1	30	<0.5	
MW26	20/01/2017	14		0.1	2.1	0.48	0.03	0.51	2.6	2	0.23	<0.05	5.7	7.2	60	2.8	
MW27	20/01/2017	14		0.32	1.6	<0.02	<0.02	<0.05	1.6	1.3	0.77	<0.05	2.5	5.2	19	2.1	
MW29	23/01/2017	14		0.17	1.5	<0.02	0.03	<0.05	1.5	1.3	<0.05	<0.05	8.3	14	34	1.9	
MW30	23/01/2017	14		0.03	0.4	3.3	0.03	3.4	3.8	0.4	0.05	<0.05	15	2.7	20	<0.5	
MW31	23/01/2017	14		0.49	2.5	<0.02	<0.02	<0.05	2.5	2	0.91	0.73	6.6	5.6	46	5.1	
MW32	23/01/2017	14		0.26	1.3	<0.02	<0.02	<0.05	1.3	1	0.38	0.3	8	7.6	69	6	
MW36	19/01/2017	14		0.04	0.9	2.3	0.04	2.3	3.2	0.9	0.12	0.09	12	1.8	9.6	<0.5	
MW37	19/01/2017	14		1.3	1.3	<0.02	<0.02	<0.05	1.3	<0.2	0.38	0.38	3.1	2.1	11	0.9	
MW38	19/01/2017	14		0.65	2.3	<0.02	<0.02	<0.05	2.3	1.6	0.87	0.77	20	12	61	16	
MW39	19/01/2017	14		0.86	1.7	<0.02	<0.02	<0.05	1.7	0.8	0.84	0.83	15	6.9	42	12	
MW40	19/01/2017	14		0.32	1.3	<0.02	0.02	<0.05	1.3	1	<0.05	<0.05	2	7.7	49	1.3	
MW41	19/01/2017	14		0.38	6.1	<0.02	<0.02	<0.05	6.1	5.7	<0.05	<0.05	3.9	7.9	73	1	
MW42	19/01/2017	14		0.29	1.1	<0.02	<0.02	<0.05	1.1	0.8	<0.05	<0.05	0.9	4.7	30	0.6	
MW50	18/01/2017	14		0.16	0.3	<0.02	<0.02	<0.05	0.3	<0.2	0.12	<0.05	28	180	1600	40	
MW51	18/01/2017	14		0.11	0.5	<0.02	<0.02	<0.05	0.5	0.4	<0.05	<0.05	18	88	770	15	
MW52	18/01/2017	14		<0.01	9.6	31	0.1	31	41	9.6	0.43	0.27	160	710	5900	130	
MW55	17/01/2017	14		<0.01	2.5	8.7	0.18	8.9	11	2.5	<0.05	<0.05	71	16	84	20	
MW1	15/02/2017	15		0.02	1.7	15	<0.02	15	17	1.7	0.18	<0.05	56	5.3	17	16	
MW2	15/02/2017	15		0.03	0.7	3.1	<0.02	3.1	3.8	0.7	0.11	<0.05	43	3	18	1.4	
MW3	15/02/2017	15		0.14	1.1	2	0.03	2	3.1	1	<0.05	<0.05	45	5.8	13	2.3	
MW4	15/02/2017	15		0.05	<0.2	0.79	0.03	0.81	0.8	<0.2	<0.05	<0.05	22	1.4	10	<0.5	
MW5	15/02/2017	15		0.02	1	0.4	<0.02	0.4	1.4	1	0.16	<0.05	9.1	5.8	36	9.6	
MW6	15/02/2017	15		0.08	1.7	5.7	<0.02	5.8	7.5	1.6	<0.05	<0.05	58	15	97	28	
MW10	15/02/2017	15		0.03	1.4	4.7	<0.02	4.7	6.1	1.4	<0.05	<0.05	27	2.5	12	3.3	
MW11	20/02/2017	15		0.02	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	<0.5	7.5	25	<0.5	
MW12	20/02/2017	15		0.01	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	0.9	3.8	28	<0.5	
MW26	17/02/2017	15		0.1	1.4	1.3	<0.02	1.3	2.7	1.3	<0.05	<0.05	3.8	5.3	39	1.4	
MW27	17/02/2017	15		0.12	1.8	<0.02	<0.02	<0.05	1.8	1.7	<0.05	<0.05	1.5	5.1	22	2.4	
MW29	17/02/2017	15		0.1	1.8	<0.02	<0.02	<0.05	1.8	1.7	0.08	<0.05	11	15	43	2.3	
MW30	17/02/2017	15		0.02	0.6	3.5	0.03	3.5	4.1	0.6	<0.05	<0.05	14	2.7	24	0.5	
MW31	21/02/2017	15		0.23	4.8	12	0.04	12	17	4.6	2.2	2.1	26	15	70	13	
MW32	21/02/2017	15		0.26	0.9	0.49	0.03	0.52	1.4	0.6	0.24	0.22	3.8	3.9	52	4.4	
MW36	16/02/2017	15		0.03	0.5	2.6	0.03	2.7	3.2	0.45	0.09	0.09	9	1.5	6.7	<0.5	
MW37	16/02/2017	15		0.28	1	1	0.03	1.1	2.2	0.72	0.24	0.17	3.5	2	8.8	0.9	
MW38	16/02/2017	15		0.49	2.2	<0.02	<0.02	<0.05	2.2	1.7	1.1	0.75	26	14	88	14	
MW39	16/02/2017	15		0.49	2.2	2.4	0.13	2.5	4.7	1.7	0.66	0.32	73	30	76	26	
MW40	21/02/2017	15		0.23	1.2	<0.02	<0.02	<0.05	1.2	1	<0.05	<0.05	2.4	7.3	48	1.6	
MW41	21/02/2017	15		0.9	6	5.6	0.12	5.7	12	5.1	0.85	0.71	8.7	12	86	1.9	
MW42	21/02/2017	15		0.21	1	<0.02	<0.02	<0.05	1	0.8	<0.05	<0.05	1.4	4.2	29	0.9	
MW50	20/02/2017	15		0.82	0.8	<0.02	<0.02	<0.05	0.8	<0.2	0.1	<0.05	29	170	1300	35	
MW51	20/02/2017	15		0.06	0.3	<0.02	<0.02	<0.05	0.3	0.2	<0.05	<0.05	22	120	690	8.3	
MW52	20/02/2017	15		1.7	3.7	37	0.22	38	42	2	0.46	0.26	180	830	5900	120	
MW55	15/02/2017	15		0.03	1.3	3.9	0.15	4.1	5.4	1.3	<0.05	<0.05	63	14	75	20	
MW1	17/03/2017	16		0.06	1.5	19	0.03	19	21	1.4	0.19	0.1	80	6.4	26	24	
MW2	20/03/2017	16		0.08	0.5	0.49	0.06	0.55	1.1	0.4	0.17	<0.05	49	8.4	42	1.2	
MW3	20/03/2017	16		0.25	0.8	0.29	<0.02	0.31	1.1	0.5	0.08	<0.05	29	3.9	10	1.9	
MW4	20/03/2017	16		0.06	0.3	0.19	<0.02	0.19	0.5	0.2	<0.05	<0.05	20	1	9.4	<0.5	
MW6	13/03/2017	16		0.17	0.7	<0.02	<0.02	<0.05	0.7	0.5	<0.05	<0.05	15	9.1	80	15	
MW10	17/03/2017	16		0.09	0.4	1.4	<0.02	1.5	1.9	0.3	0.08	<0.05	51	4.3	6.8	1.2	
MW11	17/03/2017	16		0.04	0.3	0.18	<0.02	0.2	0.5	0.3	<0.05	<0.05	<0.5	14	46	<0.5	
MW12	17/03/2017	16		0.02	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	<0.5	2.7	20	<0.5	
MW26	16/03/2017	16		0.05	0.7	0.82	<0.02	0.83	1.5	0.6	<0.05	<0.05	8.9	12	81	2.5	
MW27	16/03/2017	16		0.18	1.2	<0.02	<0.02	<0.05	1.2	1	0.09	<0.05	2.1	3.9	21	2.8	
MW29	16/03/2017	16		0.06	1.3	<0.02	<0.02	<0.05	1.3	1.1	<0.05	<0.05	4	5.2	23	1.3	
MW30	16/03/2017	16		<0.01	<0.6	2.6	<0.02	2.6	3.2	0.6	<0.05	<0.05	16	2.2	16	0.6	
MW36	15/03/2017	16		0.04	<0.2	1.9	0.03	1.9	1.9	1.9	0.1	0.07	11	1.8	6.7	<0.5	
MW37	15/03/2017	16		0.36	1	0.15	0.04	0.19	1.2	0.62	0.28	0.2	4.2	1.8	9.2	1.2	
MW38	16/03/2017	16		0.63	1.8	<0.02	<0.02	<0.05	1.8	1.2	0.96	0.86	19	11	65	16	
MW39	16/03/2017	16		1	2.3	0.94	<0.02	0.96	3.3	1.3	0.63	0.23	49	25	62	39	
MW40	16/03/2017	16		0.21	1.1	<0.02	<0.02	<0.05	1.1	0.9	0.05	<0.05	2.5	6.2	51	2	
MW41	14/03/2017	16		0.48	2.3	2.6	<0.02	2.6	4.9	1.8	0.64	0.68	10	13	99	3	
MW42	14/03/2017	16		0.24	0.7	<0.02	<0.02	<0.05	0.7	0.5	<0.05	<0.05	1.5	3.6	27	1.1	
MW50	14/03/2017	16		0.22	0.6	0.04	<0.02	0.06	0.7	0.4	0.13	<0.05	27	160	1400	37	
MW51	14/03/2017	16		0.12	0.5	0.06	<0.02	0.06	0.6	0.4	0.16	<0.05	25	130	850	13	
MW52	14/03/2017	16		2.4	8.1	47	0.56	48	56	7.9	0.57	0.33	100	450	4200	100	
MW55	20/03/2017	16		0.04	1.3	3.5	<0.02	3.5	4.8	1.3	<0.05	<0.05	110	19	110	26	
MW1	11/04/2017	17		0.07	1.6	14	0.04										

Table 6
Groundwater Analytical Results
TPH and BTEX
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	BTEX								Total Petroleum Hydrocarbon									
				Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (Sum of total)	C10-C16	C16-C34	C34-C40	C6 - C10	C6-C10 less BTEX (F1)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Units				1	1	1	2	1	3	5	50	20	50	100	100	100	50	100	100	200	200
LOR				1	1	1	2	1	3	5	50	20	50	100	100	100	50	100	100	200	200
1. ANZECC FW 95%				950	NE	NE	NE	350	NE	16	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW55	3/02/2016	2		<1	<1	<1	<2	<1	<3	-	<50	<20	<50	100	<100	100	<50	100	<100	<20	<20
MW55	17/02/2016	3		<1	<1	<1	<2	<1	<3	-	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	15/03/2016	4		<1	<1	<1	<2	<1	<3	-	<50	<20	110	<100	<100	100	<50	<100	<100	<20	<20
MW55	11/04/2016	5		3	<1	<1	<2	<1	<3	-	80	<20	100	400	100	600	80	500	<100	<20	<20
MW1	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW2	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW3	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	70	100	<100	170	<50	100	<100	<20	<20
MW4	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW5	2/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW6	2/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW10	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	20	<50	<100	<100	<50	<100	<100	50	50	
MW11	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW12	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW26	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW27	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW28	6/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW29	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW30	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW31	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW32	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW36	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW37	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW38	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW39	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW40	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW41	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW42	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW50	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW51	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW52	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	9/05/2016	6		12	<1	<1	<2	<1	<3	<10	<50	40	<50	200	<100	200	<50	200	<100	40	30
MW3	27/06/2016	7		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	27/06/2016	7		10	<1	<1	<2	<1	<3	<10	<50	<20	<50	200	<100	200	<50	200	<100	<20	<20
MW55	19/07/2016	8		4	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	24/08/2016	9		3	<1	<1	<2	<1	<3	<10	80	<20	70	200	<100	270	80	200	<100	<20	<20
MW55	22/09/2016	10		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	1/11/2016	11		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	22/11/2016	12		<1	<1	<1	<2	<1	<3	<10	70	<20	<50	200	<100	200	70	200	<100	<20	<20
MW55	13/12/2016	13		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	17/01/2017	14		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	
MW55	15/02/2017	15		<4	<4	<4	<8	<4	<12	<40	<50	<80	<50	<100	<100	<50	<100	<100	<80	<80	
MW55	20/03/2017	16		<1	<1	<1	<2	<1	<3	<10	<50	<20	70	200	<100	270	<50	200	<100	<20	<20
MW55	18/04/2017	17		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<50	<100	<100	<20	<20	

Notes:

NE = Not Established
µg/L = micrograms per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well

Investigation Levels:

1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 8
Groundwater Analytical Results
Organophosphorus Pesticides
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Organophosphorus Pesticide																			
				Azinophos methyl	Bolstar (Sulprofos)	Chlorpyrifos	Demeton-O	Diazinon	Dichlorvos	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfathion	Fenthion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Naled (Dibrom)	Phorate	Ronnel	Trichloronate	Tokuthion
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
			LOR	2	2	2	2	2	2	2	2	2	2	2	2	0.002	2	2	2	2	2	2	2
			ANZECC FW 95%	0.02	NE	0.01	NE	0.01	NE	NE	NE	NE	0.2	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW55	3/02/2016	2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.002	<2	<2	<2	<2	<2	<2	<2
MW55	17/02/2016	3		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW55	15/03/2016	4		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.0001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW55	11/04/2016	5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:
 NE = Not Established
 µg/L = micrograms per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 MW= Monitoring well

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Table 10
Groundwater Analytical Results
Expanded Suite
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Phthalates						Herbicides		Chlorinated Hydrocarbons										Anilines					SVOCs					VHC						Amino Aromatics		
				Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Pronamide	Trifluralin	Benzyl chloride	Hexachlorocyclopentadiene	Hexachloroethane	2,4-Dinitrotoluene	2,6-dinitrotoluene	Nitrobenzene	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,4,5-tetrachlorobenzene	1,3,5-Trichlorobenzene	Pentachlorobenzene	2-nitroaniline	Aniline	4-chlorophenyl phenyl ether	Bis(2-chloroethoxy) methane	Bis(2-chloroisopropyl) ether	Dibenz(a)acridine	Dibenzofuran	N-nitrosopiperidine	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachlorobutadiene	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	1-naphthylamine	2-naphthylamine
Units				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR				5	5	5	5	5	5	0.005	0.005	5	5	5	5	50	0.005	0.005	5	5	5	5	5	5	0.005	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
ANZECC FW 95%				NE	NE	1000	3700	26	NE	NE	0.0044	NE	NE	360	65	NE	550	NE	NE	NE	NE	NE	250	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
MW55	3/02/2016	2		<5	<5	<5	<5	<5	<5	<5	<0.005	<0.005	<5	<5	<5	<50	<0.005	<0.005	<5	<5	<5	<5	<5	<5	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
MW55	17/02/2016	3		<5	<5	<5	<5	<5	<5	<5	<0.005	<0.005	<5	<5	<5	<50	<0.005	<0.005	<5	<5	<5	<5	<5	<5	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
MW55	15/03/2016	4		<5	<5	<5	<5	<5	<5	<5	<0.005	<0.005	<5	<5	<5	<50	<0.005	<0.005	<5	<5	<5	<5	<5	<5	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
MW55	11/04/2016	5		<5	<5	<5	<5	<5	<5	<5	<0.005	<0.005	<5	<5	<5	<50	<0.005	<0.005	<5	<5	<5	<5	<5	<5	<0.005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	

Notes:
NE = Not Established
µg/L = micrograms per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 11
 Surface Water Analytical Results
 ASS Parameters and General Parameters
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Turbidity	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
			Units	pH_Units	mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
			LOR	0.01	10	1	1	10	20	10	20	10	5	1	-	-	-
			1. ANZECC Lowland	Lower-6.5 Upper-8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-< 60 Upper-> 180	NE	NE	NE	NE	NE	>1	>0.5	<5
SWL2-1	21/12/2015	1		7.1	190	-	310	<10	30	-	30	<10	12	63	0.33	0.19	2.50
SWL2-2	21/12/2015	1		7.0	180	-	300	<10	27	-	27	<10	12	63	0.37	0.19	2.25
SWL2-3	21/12/2015	1		7.2	210	-	320	<10	31	-	31	<10	12	72	0.32	0.17	2.58
SWL4-1	21/12/2015	1		6.5	480	-	490	13	28	-	28	<10	140	140	0.46	0.04	5.60
SWL4-2	21/12/2015	1		6.5	480	-	490	<10	24	-	24	<10	<5	150	0.42	0.03	4.80
SWL4-3	21/12/2015	1		6.6	470	-	510	12	26	-	26	<10	5	140	0.46	0.04	5.20
SW15-1	21/12/2015	1		4.4	260	-	300	24	<20	-	<20	<10	<5	88	1.20	0.06	4.00
SW15-2	21/12/2015	1		4.3	270	-	300	25	<20	-	<20	<10	<5	86	1.25	0.06	4.00
SWL16-1	15/12/2015	1		7.4	260	-	420	<10	54	-	54	<10	9	80	0.19	0.11	6.14
SWL16-2	15/12/2015	1		7.1	270	-	410	<10	43	-	43	<10	9	77	0.23	0.12	4.73
SWL16-3	15/12/2015	1		6.8	230	-	390	<10	37	-	37	<10	10	69	0.27	0.14	3.70
SWL2-1	2/02/2016	2		7.4	770	-	960	<10	55	<10	55	<10	23	240	0.18	0.10	2.39
SWL2-2	2/02/2016	2		7.6	250	-	370	<10	48	<10	48	<10	12	69	0.21	0.17	4.00
SWL2-3	2/02/2016	2		6.9	640	-	700	<10	32	<10	32	<10	7	190	0.31	0.04	4.57
SWL3-1	2/02/2016	2		6.8	630	-	680	10	31	<10	31	<10	7	190	0.32	0.04	4.43
SWL3-2	2/02/2016	2		6.8	630	-	700	<10	31	<10	31	<10	7	190	0.32	0.04	4.43
SWL3-3	3/02/2016	2		4.6	310	-	310	27	<20	<10	<20	<10	<5	92	1.35	0.05	4.00
SWL4-1	3/02/2016	2		5.2	300	-	300	20	<20	<10	<20	<10	<5	92	1	0.05	4.00
SWL4-2	3/02/2016	2		7.7	2300	-	4100	<10	41	<10	41	<10	28	1100	0.24	0.03	1.46
SW15-1	3/02/2016	2		3.9	250	-	290	36	<20	<10	<20	<10	5.2	68	1.8	0.08	3.85
SW15-2	3/02/2016	2		4	250	-	270	33	<20	<10	<20	<10	<5	64	1.65	0.08	4.00
SWL16-1	3/02/2016	2		7.7	2200	-	4000	<10	45	<10	45	<10	28	1300	0.22	0.02	1.61
SWL16-2	3/02/2016	2		7.6	2400	-	4100	<10	35	<10	35	<10	33	1200	0.29	0.03	1.06
SWL16-3	3/02/2016	2		4	250	-	280	37	<20	<10	<20	<10	<5	69	1.85	0.07	4.00
SWL17-1	28/01/2016	2		8.1	240	3.6	420	<10	73	<10	73	<10	10	69	0.14	0.14	7.30
SWL17-2	28/01/2016	2		8	250	2.5	420	<10	71	<10	71	<10	10	71	0.14	0.14	7.10
SWL17-3	28/01/2016	2		8.1	230	2.8	410	<10	68	<10	68	<10	10	70	0.15	0.14	6.80
SWL1-1	23/02/2016	3		7.1	320	3.7	500	<10	39	<10	39	<10	16	98	0.26	0.16	2.44
SWL2-1	16/02/2016	3		7	210	1.3	380	<10	29	-	29	<10	13	66	0.34	0.20	2.23
SWL2-2	16/02/2016	3		7	220	1.4	380	<10	29	-	29	<10	13	67	0.34	0.19	2.23
SWL2-3	16/02/2016	3		6.9	210	1.4	380	<10	32	-	32	<10	13	66	0.31	0.20	2.46
SWL3-1	16/02/2016	3		7.2	260	2.5	420	<10	74	-	74	<10	10	67	0.14	0.15	7.40
SWL3-2	16/02/2016	3		7.1	250	2.8	420	<10	75	-	75	<10	10	66	0.13	0.15	7.50
SWL3-3	16/02/2016	3		7.3	260	2.8	430	<10	76	-	76	<10	10	68	0.13	0.15	7.60
SWL15-1	22/02/2016	3		5.3	330	3.30	350	22	<20	<10	<20	<10	<5	91	1.10	0.05	4.00
SWL15-2	22/02/2016	3		5.1	330	1.60	360	21	<20	<10	<20	<10	<5	95	1.05	0.05	4.00
SWL17-1	18/02/2016	3		4	260	1.80	310	36	<20	<10	<20	<10	<5	64	3.60	0.08	4.00
SWL17-2	18/02/2016	3		4	280	4.5	300	35	<20	<10	<20	<10	<5	63	3.50	0.08	4.00
SWL17-3	18/02/2016	3		4	280	1.20	310	32	<20	<10	<20	<10	<5	62	3.20	0.08	4.00
SWL20-1	24/02/2016	3		6.8	6400	17	11,000	<10	24	<10	24	<10	170	3700	0.42	0.05	0.14
SWL20-2	24/02/2016	3		6.9	6700	23	11,000	<10	25	<10	25	<10	180	3600	0.40	0.05	0.14
SWL20-3	24/02/2016	3		6.8	6700	29	11,000	<10	24	<10	24	<10	180	3600	0.42	0.05	0.13
SW1-1	15/03/2016	4		7.3	300	1.9	530	<10	44	<10	44	<10	19	98	0.23	0.19	0.45
SW2-1	15/03/2016	4		7.1	210	1.8	360	<10	23	<10	23	<10	13	69	0.43	0.19	0.33
SW2-2	15/03/2016	4		7.2	220	1.8	370	<10	26	<10	26	<10	13	70	0.38	0.19	0.37
SW2-3	15/03/2016	4		7.3	220	1.7	390	<10	30	<10	30	<10	13	72	0.33	0.18	0.42
SW3-1	15/03/2016	4		7.4	250	3.2	440	<10	67	<10	67	<10	8.4	70	0.15	0.12	0.96
SW3-2	15/03/2016	4		7.5	260	3.3	440	<10	69	<10	69	<10	11	74	0.14	0.15	0.93
SWL3-3	15/03/2016	4		7.5	250	-	440	<10	67	<10	67	<10	8.5	72	0.15	0.12	0.93
SWL15-1	21/03/2016	4		5	280	4.7	350	21	<20	<10	<20	<10	<5	89	1.05	0.06	4.00
SWL15-2	21/03/2016	4		5.1	300	8.1	350	20	<20	<10	<20	<10	<5	90	1.00	0.06	4.00
SWL17-1	22/03/2016	4		4	250	4.4	290	33	<20	<10	<20	<10	<5	64	3.30	0.08	4.00
SWL17-2	22/03/2016	4		4	260	2.1	290	33	<20	<10	<20	<10	<5	64	3.30	0.08	4.00
SWL17-3	22/03/2016	4		4	250	6.4	290	33	<20	<10	<20	<10	<5	61	3.30	0.08	4.00
SWL20-1	16/03/2016	4		7.4	7300	16	11,000	<10	37	<10	37	<10	230	3700	0.27	0.06	0.16
SWL20-2	16/03/2016	4		7.5	8100	14	11,000	<10	37	<10	37	<10	230	3800	0.27	0.06	0.16
SWL20-3	16/03/2016	4		7.5	8800	16	11,000	<10	35	<10	35	<10	230	3600	0.29	0.06	0.15
SWL1-1	11/04/2016	5		7.4	230	3.5	450	<10	45	<10	45	<10	14	81	0.22	0.17	3.21
SWL2-1	11/04/2016	5		7.4	190	1.6	380	<10	26	<10	26	<10	13	69	0.38	0.19	2.00
SWL2-2	11/04/2016	5		7.3	200	1.9	330	<10	26	<10	26	<10	13	69	0.38	0.19	2.00
SWL2-3	11/04/2016	5		7.4	210	2.1	380	<10	26	<10	26	<10	13	70	0.38	0.19	2.00
SWL3-1	11/04/2016	5		7.9	240	5	410	<10	72	<10	72	<10	8.7	68	0.14	0.13	8.28
SWL3-2	11/04/2016	5		7.9	240	2.9	420	<10	72	<10	72	<10	8.3	68	0.14	0.12	8.67
SWL3-3	11/04/2016	5		7.9	240	4.5	410	<10	72	<10	72	<10	8.1	69	0.14	0.12	8.89
SWL15-1	13/04/2016	5		4.9	270	5.90	340	43	<20	<10	&						

Table 11
Surface Water Analytical Results
ASS Parameters and General Parameters
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Turbidity	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
			Units	pH Units	mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
			LOR	0.01	10	1	1	10	20	10	20	10	5	1	-	-	-
			1. ANZECC Lowland	Lower-6.5 Upper-8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-< 60 Upper-> 180	NE	NE	NE	NE	NE	>1	>0.5	<5
SWL1-1	28/06/2016	7		6.7	230	1.3	420	<10	38	<10	36	<10	13	78	0.26	0.17	2.92
SWL1-2	28/06/2016	7		6.6	220	1.5	410	<10	36	<10	36	<10	13	73	0.28	0.18	2.77
SWL1-3	28/06/2016	7		6.8	130	1.3	200	<10	28	<10	28	<10	6.8	36	0.36	0.19	4.12
SWL2-1	27/06/2016	7		7.1	170	1.2	270	<10	<20	<10	<20	<10	11	59	0.50	0.19	1.82
SWL2-2	27/06/2016	7		7.1	170	1.4	250	<10	<20	<10	<20	<10	11	59	0.50	0.19	1.82
SWL2-3	27/06/2016	7		7	170	1.3	270	<10	<20	<10	<20	<10	12	59	0.50	0.20	1.67
SWL3-1	27/06/2016	7		7.5	180	3	330	<10	52	<10	52	<10	7.1	56	0.19	0.13	7.32
SWL3-2	27/06/2016	7		7.5	210	2.7	330	<10	54	<10	54	<10	7.1	56	0.19	0.09	7.61
SWL3-3	27/06/2016	7		7.3	190	2.3	340	<10	54	<10	54	<10	7.2	55	0.19	0.09	7.50
SWL4-1	28/06/2016	7		6.5	360	3.2	540	<10	<20	<10	<20	<10	26	130	0.50	0.20	0.77
SWL4-2	28/06/2016	7		6.6	350	5.6	520	<10	<20	<10	<20	<10	23	120	0.50	0.19	0.87
SWL4-3	28/06/2016	7		6.6	350	2.3	530	<10	<20	<10	<20	<10	25	130	0.50	0.19	0.80
SWL15-1	23/06/2016	7		4.9	340	4.1	390	17	<20	<10	<20	<10	<5	110	0.85	0.05	4.00
SWL15-2	23/06/2016	7		5.3	360	6.8	390	27	<20	<10	<20	<10	<5	100	1.35	0.05	4.00
SWL16-1	23/06/2016	7		6.8	740	1.8	990	29	67	<10	67	<10	30	210	0.43	0.14	2.23
SWL16-2	23/06/2016	7		7	390	3.1	530	12	36	<10	36	<10	10	120	0.33	0.08	3.60
SWL16-3	23/06/2016	7		7.3	400	3.4	560	14	38	<10	38	<10	11	130	0.37	0.08	3.45
SWL17-1	22/06/2016	7		3.7	520	2.7	480	170	<20	<10	<20	<10	10	130	17.00	0.08	2.00
SWL17-2	22/06/2016	7		3.6	610	3.1	620	63	<20	<10	<20	<10	13	160	6.30	0.08	1.54
SWL17-3	22/06/2016	7		3.5	670	1.4	750	1800	<20	<10	<20	<10	15	210	180.00	0.07	1.33
SWL20-1	21/06/2016	7		6.6	2100	7.8	3200	15	<20	<10	<20	<10	33	1000	0.75	0.03	0.61
SWL20-2	21/06/2016	7		6.6	2100	6.4	3500	13	<20	<10	<20	<10	34	1100	0.65	0.03	0.59
SWL20-3	21/06/2016	7		6.6	2200	4.5	3300	15	<20	<10	<20	<10	33	1100	0.75	0.03	0.61
SWL1-1	18/07/2016	8		6.8	60	2.8	120	<10	<20	<10	<20	<10	<5	20	0.50	0.25	4.00
SWL1-2	18/07/2016	8		6.9	63	2.9	130	<10	22	<10	22	<10	<5	20	0.45	0.25	4.40
SWL1-3	18/07/2016	8		6.9	69	3.3	140	<10	22	<10	22	<10	<5	21	0.45	0.24	4.40
SWL2-1	19/07/2016	8		6.9	160	-	250	<10	<20	<10	<20	<10	11	59	0.50	0.19	1.82
SWL2-2	19/07/2016	8		7	160	-	260	<10	<20	<10	<20	<10	11	56	0.50	0.20	1.82
SWL2-3	19/07/2016	8		6.9	170	-	260	<10	<20	<10	<20	<10	11	60	0.50	0.18	1.82
SWL3-1	19/07/2016	8		7.3	180	2.9	320	<10	52	<10	52	<10	6.5	55	0.19	0.12	3.08
SWL3-2	19/07/2016	8		7.3	190	2.4	320	<10	50	<10	50	<10	6.5	55	0.20	0.12	7.69
SWL3-3	19/07/2016	8		7.2	180	3.1	320	<10	56	<10	56	<10	6.5	56	0.18	0.09	8.62
SWL4-1	19/07/2016	8		6.4	370	6.3	640	13	<20	<10	<20	<10	25	140	0.65	0.04	0.80
SWL4-2	19/07/2016	8		6.6	350	3.8	650	11	<20	<10	<20	<10	25	130	0.55	0.19	0.80
SWL4-3	19/07/2016	8		6.5	390	3.7	630	14	<20	<10	<20	<10	24	130	0.70	0.18	0.83
SWL5-1	18/07/2016	8		6.1	120	1.6	160	<10	<20	<10	<20	<10	7.2	26	0.50	0.28	2.78
SWL15-1	14/07/2016	8		5	410	6.7	500	-	<20	<10	<20	<10	5.9	140	-	0.04	4.00
SWL15-2	14/07/2016	8		4.8	410	2.9	520	-	<20	<10	<20	<10	6	140	-	0.04	4.00
SWL16-1	14/07/2016	8		6.6	680	1.9	920	-	71	<10	71	<10	26	220	-	0.12	2.73
SWL16-2	14/07/2016	8		6.9	360	2.8	490	-	38	<10	38	<10	9.6	110	-	0.09	3.96
SWL16-3	14/07/2016	8		6.8	360	3.8	490	-	36	<10	36	<10	10	110	-	0.09	3.60
SWL17-1	13/07/2016	8		3.6	570	1.8	680	73	<20	<10	<20	<10	6.7	170	7.30	0.04	2.99
SWL17-2	13/07/2016	8		3.6	550	1.6	690	80	<20	<10	<20	<10	6.9	170	8.00	0.04	2.90
SWL17-3	13/07/2016	8		3.5	570	1.5	650	79	<20	<10	<20	<10	6.7	180	7.90	0.04	2.99
SWL20-1	18/07/2016	8		6.6	1800	3.2	3000	11	24	<10	24	<10	25	890	0.46	0.03	0.80
SWL20-2	18/07/2016	8		6.6	1800	3.2	3100	<10	25	<10	25	<10	25	850	0.40	0.03	0.80
SWL20-3	18/07/2016	8		6.7	1800	3	3000	11	26	<10	26	<10	25	800	0.42	0.03	0.80
SWL1_1	25/08/2016	9		7.1	200	1.1	350	10	49	<10	49	<10	11	67	0.20	0.16	4.45
SWL1_2	25/08/2016	9		7	200	<1	360	10	39	<10	39	<10	12	68	0.26	0.18	3.25
SWL1_3	25/08/2016	9		7.1	140	1.8	250	<10	32	<10	32	<10	6.4	43	0.31	0.15	5.00
SWL2_1	25/08/2016	9		7.2	150	1	270	<10	23	<10	23	<10	5.5	55	0.43	0.22	1.92
SWL2_2	25/08/2016	9		7.1	140	1.3	260	<10	23	<10	23	<10	10	54	0.43	0.19	2.30
SWL2_3	25/08/2016	9		7.1	140	<1	260	<10	24	<10	24	<10	11	59	0.42	0.19	2.18
SWL3_1	24/08/2016	9		7.9	200	-	320	<10	61	<10	61	<10	6.4	51	0.16	0.13	9.53
SWL3_2	24/08/2016	9		7.6	200	1.9	300	<10	50	<10	50	<10	6.4	53	0.20	0.12	7.81
SWL3_3	24/08/2016	9		7.9	210	4.1	330	<10	60	<10	60	<10	6.5	52	0.17	0.13	9.23
SWL4_1	24/08/2016	9		6.5	400	1.2	660	<10	<20	<10	<20	<10	25	130	0.50	0.19	0.80
SWL4_2	24/08/2016	9		6.8	400	4.2	640	<10	<20	<10	<20	<10	26	130	0.50	0.20	0.77
SWL4_3	24/08/2016	9		6.7	410	3.6	650	<10	<20	<10	<20	<10	26	130	0.50	0.20	0.77
SWL5_1	23/08/2016	9		5.6	120	<1	150	<10	<20	<10	<20	<10	5.3	24	0.50	0.22	3.77
SWL15_1	18/08/2016	9		6.1	360	1.3	380	21	26	<10	26	<10	<5	98	0.81	0.05	5.20
SWL15_2	18/08/2016	9		6.5	420	1.4	410	18	37	<10	37	<10	<5	110	0.49	0.05	7.40
SWL16_1	18/08/2016	9		6.5	460	<1	610	25	47	<10	47	<10	16	120	0.53	0.13	2.94
SWL16_2	18/08/2016	9		6.7	330	3.7	420	15	34	<							

Table 11
Surface Water Analytical Results
ASS Parameters and General Parameters
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Turbidity	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
			Units	pH Units	mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
			LOR	0.01	10	1	1	10	20	10	20	10	5	1	-	-	-
			1. ANZECC Lowland	Lower-6.5 Upper-8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-< 60 Upper-> 180	NE	NE	NE	NE	NE	>1	>0.5	<5
SWL1_1	1/11/2016	11		7.2	220	2.3	420	<10	47	<10	47	<10	12	77	0.21	0.16	3.92
SWL1_2	1/11/2016	11		7.1	300	1.5	410	<10	53	<10	53	<10	11	78	0.19	0.14	4.82
SWL1_3	1/11/2016	11		6.9	210	<1	360	<10	42	<10	42	<10	8.7	69	0.24	0.13	4.83
SWL2_1	1/11/2016	11		7.6	220	1.2	380	<10	61	<10	61	<10	11	63	0.16	0.17	5.55
SWL2_2	1/11/2016	11		7.6	220	2	390	<10	62	<10	62	<10	11	62	0.16	0.18	5.64
SWL2_3	1/11/2016	11		7.7	210	1.1	390	<10	60	<10	60	<10	11	64	0.17	0.17	5.45
SWL3-1	1/11/2016	11		7.8	210	2.2	360	<10	66	<10	66	<10	<5	59	0.15	0.08	13.20
SWL3-2	1/11/2016	11		7.8	200	2	350	<10	67	<10	67	<10	<5	60	0.15	0.08	13.40
SWL3-3	1/11/2016	11		7.8	220	2.3	350	<10	67	<10	67	<10	<5	59	0.15	0.08	13.40
SWL4-1	24/10/2016	11		6.7	420	120	670	<10	<20	<10	<20	<10	26	150	0.50	0.17	0.77
SWL4-2	24/10/2016	11		6.8	410	16	680	<10	<20	<10	<20	<10	26	150	0.50	0.17	0.77
SWL4-3	24/10/2016	11		7	400	6.1	680	<10	<20	<10	<20	<10	26	150	0.50	0.17	0.77
SWL15-1	26/10/2016	11		4.3	290	2.4	310	30	<20	<10	<20	<10	<5	73	1.50	0.07	4.00
SWL15-2	26/10/2016	11		4.3	270	4.3	310	31	<20	<10	<20	<10	<5	74	1.55	0.07	4.00
SWL16-1	26/10/2016	11		6.4	370	2	530	25	42	<10	42	<10	12	110	0.60	0.11	3.50
SWL16-2	26/10/2016	11		6.8	290	13	400	11	34	<10	34	<10	<5	94	0.32	0.05	6.80
SWL16-3	26/10/2016	11		6.8	320	34	440	<10	40	<10	40	<10	<5	110	0.25	0.05	8.00
SWL17-1	26/10/2016	11		3.9	210	16	310	46	<20	<10	<20	<10	<5	84	4.60	0.06	4.00
SWL17-2	26/10/2016	11		4	210	5.7	290	37	<20	<10	<20	<10	<5	86	3.70	0.06	4.00
SWL20-1	25/10/2016	11		6.9	1900	6.4	2700	<10	25	<10	25	<10	27	930	0.40	0.03	0.93
SWL20-2	25/10/2016	11		6.9	1900	6.3	2900	<10	21	<10	21	<10	27	980	0.48	0.03	0.78
SWL20-3	25/10/2016	11		6.8	1900	6.2	3200	<10	22	<10	22	<10	27	950	0.45	0.03	0.81
SWL1-1	22/11/2016	12		7.3	240	-	420	<10	51	<10	51	<10	36	80	0.20	0.45	1.42
SWL1-2	22/11/2016	12		7	230	-	390	<10	52	<10	52	<10	37	82	0.19	0.45	1.41
SWL1-3	22/11/2016	12		7.3	210	<1	370	<10	54	<10	54	<10	26	70	0.19	0.37	2.08
SWL2-1	22/11/2016	12		7.8	230	<1	390	<10	65	<10	65	<10	34	63	0.15	0.54	1.91
SWL2-2	22/11/2016	12		7.6	240	<1	390	<10	68	<10	68	<10	34	63	0.15	0.54	2.00
SWL2-3	22/11/2016	12		7.7	210	<1	380	<10	72	<10	72	<10	34	62	0.14	0.55	2.12
SWL3-1	22/11/2016	12		7.6	230	1.3	360	<10	72	<10	72	<10	22	59	0.14	0.37	3.27
SWL3-2	22/11/2016	12		7.7	230	1.2	370	<10	71	<10	71	<10	22	59	0.14	0.37	3.23
SWL4-1	22/11/2016	12		6.8	400	11	620	<10	<20	<10	<20	<10	73	150	0.50	0.49	0.27
SWL4-2	22/11/2016	12		7	420	2	620	<10	<20	<10	<20	<10	75	160	0.50	0.47	0.27
SWL4-3	22/11/2016	12		6.9	410	2.3	620	<10	<20	<10	<20	<10	77	150	0.50	0.51	0.26
SWL5-1	28/11/2016	12		5.3	160	4.2	190	<10	<20	<10	<20	<10	14	38	0.50	0.37	1.43
SWL15-1	24/11/2016	12		4.9	280	7	270	20	<20	<10	<20	<10	<5	78	1.00	0.06	4.00
SWL15-2	24/11/2016	12		4.7	270	2	300	22	<20	<10	<20	<10	<5	77	1.10	0.06	4.00
SWL16-1	24/11/2016	12		6.9	310	71	480	<10	61	<10	61	<10	<5	100	0.16	0.05	4.00
SWL16-2	24/11/2016	12		7.5	280	3.6	400	<10	59	<10	59	<10	<5	82	0.17	0.06	4.00
SWL16-3	24/11/2016	12		7.5	310	9.8	460	<10	60	<10	60	<10	<5	97	0.17	0.05	4.00
SWL17-1	28/11/2016	12		3.8	290	10	310	35	<20	<10	<20	<10	5.1	74	3.50	0.07	3.92
SWL17-2	28/11/2016	12		3.9	270	11	260	36	<20	<10	<20	<10	<5	69	3.60	0.07	4.00
SWL17-3	28/11/2016	12		3.8	260	10	290	36	<20	<10	<20	<10	<5	63	3.60	0.08	4.00
SWL20-1	23/11/2016	12		7.1	2400	5.2	3600	<10	28	<10	28	<10	23	1100	0.36	0.02	1.22
SWL20-2	23/11/2016	12		7.1	2400	5.1	3600	<10	27	<10	27	<10	23	1100	0.37	0.02	1.17
SWL20-3	23/11/2016	12		6.9	2300	4.9	3600	<10	26	<10	26	<10	23	1100	0.38	0.02	1.13
SWL1-1	13/12/2016	13		7.5	220	8.5	380	<10	69	<10	69	<10	35	79	0.14	0.44	1.97
SWL1-2	13/12/2016	13		6.9	280	1.9	470	<10	61	<10	61	<10	42	92	0.16	0.46	1.45
SWL1-3	13/12/2016	13		7	220	1.2	360	<10	55	<10	55	<10	18	83	0.18	0.22	3.06
SWL2-1	13/12/2016	13		7.6	240	1	390	<10	69	<10	69	<10	36	72	0.14	0.50	1.92
SWL2-2	13/12/2016	13		7.4	220	<1	390	<10	62	<10	62	<10	35	71	0.16	0.49	1.77
SWL2-3	13/12/2016	13		7.6	250	<1	400	<10	62	<10	62	<10	35	71	0.16	0.49	1.77
SWL3-1	13/12/2016	13		7.5	240	1.3	380	<10	72	<10	72	<10	24	69	0.14	0.35	3.00
SWL3-2	13/12/2016	13		8.1	240	1.4	380	<10	77	<10	77	<10	24	68	0.13	0.35	3.21
SWL3-3	13/12/2016	13		7.5	240	1.3	380	<10	77	<10	77	<10	24	67	0.13	0.36	3.21
SWL4-1	13/12/2016	13		6.5	350	22	510	<10	20	<10	20	<10	69	140	0.50	0.49	0.29
SWL4-2	13/12/2016	13		6.6	340	2.9	570	<10	24	<10	24	<10	63	140	0.42	0.45	0.38
SWL4-3	13/12/2016	13		6.6	310	1.6	500	<10	22	<10	22	<10	51	110	0.45	0.46	0.43
SWL5-1	13/12/2016	13		5.5	170	8.4	190	<10	<20	<10	<20	<10	15	44	0.50	0.34	1.33
SWL15-1	15/12/2016	13		4.8	260	44	330	31	<20	<10	<20	<10	7.5	91	1.55	0.08	2.67
SWL15-2	14/12/2016	13		4.9	320	1.4	350	24	<20	<10	<20	<10	10	88	1.20	0.11	2.00
SWL16-1	15/12/2016	13		6.6	470	1.8	640	19	56	<10	56	<10	35	150	0.34	0.23	1.60
SWL16-2	15/12/2016	13		6.8	230	4.6	370	<10	50	<10	50	<10	15	77	0.50	0.19	3.33
SWL16-3	14/12/2016	13		7.4	300	4.2	340	<10	42	<10	42	<10	19	74	0.50	0.26	2.21
SWL17-1	15/12/2016	13		3.9	250</												

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Turbidity	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
			Units	pH_Units	mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
			LOR	0.01	10	1	1	10	20	10	20	10	5	1	-	-	-
			1. ANZECC Lowland	Lower-6.5 Upper-8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-< 60 Upper-> 180	NE	NE	NE	NE	NE	>1	>0.5	<5
SWL1_1	15/02/2017	15		7	130	1.7	270	<10	37	<10	37	<10	32	49	0.27	0.65	1.16
SWL1_2	15/02/2017	15		6.9	120	1.5	240	<10	33	<10	33	<10	20	41	0.30	0.49	1.65
SWL1_3	15/02/2017	15		6.9	83	1.2	160	<10	25	<10	25	<10	11	25	0.40	0.44	2.27
SWL2_1	15/02/2017	15		7.6	220	1.3	410	<10	50	<10	50	<10	38	69	0.20	0.55	1.32
SWL2_2	15/02/2017	15		7.6	220	1.2	410	<10	49	<10	49	<10	40	66	0.20	0.61	1.23
SWL2_3	15/02/2017	15		7.6	210	1	410	<10	49	<10	49	<10	41	75	0.20	0.55	1.20
SWL3_1	15/02/2017	15		7.8	230	1.7	410	<10	71	<10	71	<10	25	62	0.14	0.40	2.84
SWL3_2	15/02/2017	15		7.9	220	1.8	400	<10	74	<10	74	<10	24	62	0.14	0.39	3.08
SWL3_3	15/02/2017	15		7.8	230	2.2	410	<10	73	<10	73	<10	25	62	0.14	0.40	2.92
SWL4_1	15/02/2017	15		6.5	400	53	650	<10	<20	<10	<20	<10	73	140	0.50	0.52	0.27
SWL4_2	15/02/2017	15		6.6	390	8.5	670	<10	22	<10	22	<10	74	140	0.45	0.53	0.30
SWL4_3	15/02/2017	15		6.7	380	10	660	<10	22	<10	22	<10	72	140	0.45	0.51	0.31
SWL15_1	16/02/2017	15		4.8	360	7.4	350	29	<20	<10	<20	<10	6.4	110	1.45	0.06	3.13
SWL15_2	16/02/2017	15		4.7	370	12	390	31	<20	<10	<20	<10	7.9	100	1.55	0.08	2.53
SWL16_1	16/02/2017	15		7.3	400	90	470	<10	51	<10	51	<10	22	130	0.20	0.17	2.32
SWL16_2	16/02/2017	15		7.3	390	14	520	<10	51	<10	51	<10	19	120	0.20	0.16	2.68
SWL16_3	16/02/2017	15		7.1	390	37	490	15	47	<10	47	<10	21	130	0.32	0.16	2.24
SWL17-1	21/02/2017	15		3.9	300	7.8	310	44	<20	<10	<20	<10	17	100	4.40	0.17	0.59
SWL20-1	21/02/2017	15		6.9	2700	150	4100	22	65	<10	65	<10	<5	1300	0.34	0.00	13.00
SWL20-2	21/02/2017	15		5.9	2700	150	4000	18	76	<10	76	<10	<5	1300	0.24	0.00	15.20
SWL20-3	21/02/2017	15		5.9	2700	140	3900	21	68	<10	68	<10	<5	1300	0.31	0.00	13.60
SWL1_1	20/03/2017	16		6.9	280	3.7	470	17	47	<10	47	<10	46	79	0.36	0.58	1.02
SWL1_2	20/03/2017	16		6.9	260	3.7	460	17	49	<10	49	<10	45	84	0.35	0.54	1.09
SWL1_3	20/03/2017	16		7	220	1.6	390	13	45	<10	45	<10	27	62	0.29	0.44	1.67
SWL2_1	20/03/2017	16		7.5	260	2.6	440	<10	52	<10	52	<10	43	70	0.19	0.61	1.21
SWL2_2	20/03/2017	16		7.5	250	1.7	440	<10	52	<10	52	<10	43	75	0.19	0.57	1.21
SWL2_3	20/03/2017	16		7.5	240	1.6	430	<10	52	<10	52	<10	42	87	0.19	0.48	1.24
SWL3_1	20/03/2017	16		7.7	250	2.5	440	<10	79	<10	79	<10	24	72	0.13	0.33	3.29
SWL3_2	20/03/2017	16		7.7	270	2.7	450	<10	77	<10	77	<10	24	71	0.13	0.34	3.21
SWL3_3	20/03/2017	16		7.6	260	2.7	440	<10	80	<10	80	<10	24	72	0.13	0.33	3.33
SWL4_1	13/03/2017	16		6.3	170	25	280	13	21	<10	21	<10	25	48	0.62	0.52	0.84
SWL4_2	13/03/2017	16		6.7	150	4	220	10	27	<10	27	<10	13	39	0.37	0.33	2.08
SWL4_3	13/03/2017	16		6.8	150	4.8	220	<10	25	<10	25	<10	12	38	0.40	0.32	2.08
SWL15-1	15/03/2017	16		4.4	300	2.4	380	34	<20	<10	<20	<10	8.6	76	1.70	0.11	2.33
SWL15-2	15/03/2017	16		4.4	310	1.1	380	34	<20	<10	<20	<10	8.6	90	1.70	0.10	2.33
SWL16-1	15/03/2017	16		7.1	260	4	400	<10	43	<10	43	<10	18	74	0.23	0.24	2.39
SWL16-2	15/03/2017	16		7	270	18	400	<10	43	<10	43	<10	19	73	0.23	0.26	2.26
SWL16-3	15/03/2017	16		6.7	260	68	400	11	38	<10	38	<10	21	75	0.29	0.28	1.81
SWL17-1	16/03/2017	16		4	300	43	330	49	<20	<10	<20	<10	12	80	4.90	0.15	0.83
SWL20-1	14/03/2017	16		7	2700	45	4600	10	42	<10	42	<10	56	1300	0.24	0.04	0.75
SWL20-2	14/03/2017	16		6.9	2700	49	4700	10	43	<10	43	<10	57	1400	0.23	0.04	0.75
SWL20-3	14/03/2017	16		7	2700	48	4700	11	45	<10	45	<10	57	1400	0.24	0.04	0.79
SWL1-1	11/04/2017	17		7	250	<1	490	13	46	<10	46	<10	37	76	0.28	0.49	1.24
SWL1-2	11/04/2017	17		7.1	250	1.2	490	<10	50	<10	50	<10	36	76	0.20	0.47	1.39
SWL1-3	11/04/2017	17		7.3	210	4.3	410	<10	65	<10	65	<10	5.6	68	0.15	0.08	11.61
SWL2-1	11/04/2017	17		7.5	270	<1	450	<10	44	<10	44	<10	35	71	0.23	0.49	1.26
SWL2-2	11/04/2017	17		7.4	230	<1	450	<10	45	<10	45	<10	37	70	0.22	0.53	1.22
SWL2-3	11/04/2017	17		7.6	260	<1	450	<10	44	<10	44	<10	36	69	0.23	0.52	1.22
SWL3-1	11/04/2017	17		7.6	240	<1	460	<10	64	<10	64	<10	11	66	0.16	0.17	5.82
SWL3-2	11/04/2017	17		7.6	250	1.3	460	<10	63	<10	63	<10	11	66	0.16	0.17	5.73
SWL3-3	11/04/2017	17		7.6	250	1.2	460	<10	63	<10	63	<10	12	68	0.16	0.18	5.25
SWL4-1	11/04/2017	17		6.5	380	35	730	13	<20	<10	<20	<10	65	150	0.65	0.43	0.31
SWL4-2	11/04/2017	17		6.4	380	12	750	14	<20	<10	<20	<10	63	150	0.70	0.42	0.32
SWL15-1	18/04/2017	17		4.8	330	1.3	400	31	<20	<10	<20	<10	8.4	78	1.55	0.11	2.38
SWL15-2	18/04/2017	17		4.7	310	16	400	39	<20	<10	<20	<10	8.8	79	1.95	0.11	2.27
SWL16-1	18/04/2017	17		7.4	240	5.6	410	<10	51	<10	51	<10	19	51	0.20	0.37	2.68
SWL16-2	18/04/2017	17		7.4	230	4.3	430	<10	49	<10	49	<10	19	52	0.20	0.37	2.58
SWL16-3	18/04/2017	17		6.8	550	59	920	34	59	<10	59	<10	34	160	0.58	0.21	1.74
SWL17-1	18/04/2017	17		3.9	290	2.8	320	50	<20	<10	<20	<10	12	65	5.00	0.18	0.83
SWL17-2	18/04/2017	17		3.9	300	8.3	380	52	<20	<10	<20	<10	12	66	5.20	0.18	0.83
SWL17-3	18/04/2017	17		4	310	13	370	54	<20	<10	<20	<10	13	66	5.40	0.20	0.77
SWL20-1	10/04/2017	17		7.2	2600	10	4800	14	33	<10	33	<10	75	1300	0.42	0.06	0.44
SWL20-2	10/04/2017	17		7.1	2600	5	4500	12	27	<10	27	<10	75	1400	0.44	0.05	0.36
SWL20-3	10/04/2017	17		7.1	2700	9.5	4700	11	25	<10	25	<10	75	1400	0.44	0.05	0.33

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 SWL = Surface water location
 µS/cm = Microsiemens per centimeter
 NTU = Nephelometric Turbidity Units

Investigation Levels:
 1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
 2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 14
Surface Water Analytical Results
TPH and BTEX
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	BTEX							Total Petroleum Hydrocarbon										
				Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (Sum of total)	C10-C16	C16-C34	C34-C40	C6 - C10	C6-C10 less BTEX (F1)
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			LOR	1	1	1	2	1	3	5	50	20	50	100	100	100	50	100	100	20	20
			1. ANZECC Lowland	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	950	NE	NE	NE	350	NE	16	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
SWL1-1	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL2-1	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL2-2	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL2-3	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL3-1	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL3-2	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL3-3	9/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL15-1	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL15-2	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL16-1	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL16-2	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL16-3	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL17-1	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL17-2	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20
SWL17-3	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20

Notes:
NE = Not Established
µg/L = micrograms per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
SWL= Surface water location

Investigation Levels:
1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters				
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S
			Units	pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	10	1	10	20	10	20	10	5
			ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE
			DER 2015	Lower - 6.5 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE
MW1	27/01/2016	2		8.1	360	510	<10	120	<10	120	<10	11
QC18	27/01/2016	2	Duplicate of MW1	7.4	360	490	<10	110	<10	110	<10	30
			RPD %	9	0	4	#	9	#	9	#	93
MW1	16/02/2016	3		7.4	330	500	<10	-	-	180	<10	10
QC40	16/02/2016	3	Duplicate of MW1	6.9	320	500	<10	-	-	110	<10	9.9
			RPD %	7	3	0	#	#	#	48	#	1
MW1	15/03/2016	4		7.7	430	650	<10	-	<10	98	<10	11
QC62	15/03/2016	4	Duplicate of MW1	7.05	436	595	-	107	<1	107	<1	-
			RPD %	9	1	9	-	-	#	9	#	-
MW1	11/04/2016	5		7.9	430	700	<10	-	<10	110	<10	12
QC83	11/04/2016	5	Duplicate of MW1	7.9	450	680	10	-	<10	110	<10	12
			RPD %	0	5	3	67	-	#	0	#	0
MW50	12/04/2016	5		6.8	4700	8500	25	-	<10	29	<10	54
QC86	12/04/2016	5	Duplicate of MW50	6.9	4700	8600	17	-	<10	26	<10	53
			RPD %	1	0	1	38	-	#	11	#	2
MW1	9/05/2016	6		6.9	290	430	16	85	<10	85	<10	10
QC83	9/05/2016	6	Duplicate of MW1	6.7	300	440	17	80	<10	80	<10	11
			RPD %	3	3	2	6	6	#	6	#	10
MW50	4/05/2016	6		6.1	4700	7300	26	27	<10	27	<10	54
QC86	4/05/2016	6	Duplicate of MW50	5.9	5100	7600	33	30	<10	30	<10	56
			RPD %	3	8	4	24	11	#	11	#	4
MW1	28/06/2016	7		7	240	350	<10	71	<10	71	<10	9.5
QC138	28/06/2016	7	Duplicate of MW1	6.9	240	330	<10	64	<10	64	<10	9.7
			RPD %	1	0	6	#	10	#	10	#	2
MW50	21/06/2016	7		6.4	5500	8000	87	52	<10	52	<10	59
QC121	21/06/2016	7	Duplicate of MW50	6.3	5300	8200	54	27	<10	27	<10	59
			RPD %	2	4	2	47	63	#	63	#	0
MW1	19/07/2016	8		6.5	190	290	25	50	<1	50	<10	10
QC157	19/07/2016	8	Duplicate of MW1	6.6	190	280	22	54	<1	54	<10	10
			RPD %	2	0	4	13	8	#	8	#	0
MW50	12/07/2016	8		6.2	4500	8200	68	46	<1	46	<10	57
QC141	12/07/2016	8	Duplicate of MW50	5.8	4800	8200	75	44	<1	44	<10	56
			RPD %	7	6	0	10	4	#	4	#	2
MW1	25/08/2016	9		7.2	200	360	16	80	<10	80	<10	8.7
QC180	25/08/2016	9	Duplicate of MW1	7.1	210	370	<10	83	<10	83	<10	8.8
			RPD %	1	5	3	105	4	#	4	#	1
MW50	15/08/2016	9		6.1	5100	9200	79	35	<10	35	<10	60
QC159	15/08/2016	9	Duplicate of MW50	6.5	5100	8900	32	28	<10	28	<10	62
			RPD %	6	0	3	85	22	#	22	#	3
MW1	29/09/2016	10		6.9	210	310	11	72	<10	72	<10	7.1
QC198	29/09/2016	10	Duplicate of MW1	7.1	200	280	<10	68	<10	68	<10	7.2
			RPD %	3	5	10	75	6	#	6	#	1
MW50	28/09/2016	10		6.1	4600	8100	45	26	<10	26	<10	60
QC195	28/09/2016	10	Duplicate of MW50	6.1	4800	8100	40	28	<10	28	<10	60
			RPD %	0	4	0	12	7	#	7	#	0
MW1	24/10/2016	11		7.9	260	340	<10	75	<10	75	<10	8.6
QC227	24/10/2016	11	Duplicate of MW1	7.7	270	390	<10	76	<10	76	<10	<5
			RPD %	3	4	14	#	1	#	1	#	110
MW50	24/10/2016	11		5.8	4700	8600	74	36	<10	36	<10	60
QC213	24/10/2016	11	Duplicate of MW50	6.29	5940	-	66	26	<1	26	<1	159
			RPD %	8	23	#	11	32	#	32	#	90
MW1	22/11/2016	12		7.4	320	460	13	110	<10	110	<10	25
QC242	22/11/2016	12	Duplicate of MW1	7.6	330	470	<10	100	<10	100	<10	27.00
			RPD %	3	3	2	26	10	#	10	#	8
MW50	23/11/2016	12		6.5	5000	8700	25	28	<10	28	<10	59
QC248	23/11/2016	12	Duplicate of MW50	6.3	4900	8900	26	39	<10	39	<10	57
			RPD %	3	2	2	4	33	#	33	#	3
MW1	13/12/2016	13		7.1	410	600	19	140	<10	140	<10	43
QC260a	13/12/2016	13	Duplicate of MW1	7.1	420	600	15	130	<10	130	<10	26
			RPD %	0	2	0	24	7	#	7	#	49
MW50	14/12/2016	13		5.9	4600	8300	21	27	<10	27	<10	180
QC268	14/12/2016	13	Duplicate of MW50	6.4	4600	7300	20	27	<10	27	<10	180
			RPD %	8	0	13	5	0	#	0	#	0
MW1	17/01/2017	14		7.7	370	550	18	150	<10	150	<10	34
QC278	17/01/2017	14	Duplicate of MW1	7.2	380	540	14	140	<10	140	<10	31
			RPD %	7	3	2	25	7	#	7	#	9
MW50	18/01/2017	14		6	4900	8400	53	34	<10	34	<10	170
QC285	18/01/2017	14	Duplicate of MW50	6.24	5690	8610	18	28	<1	28	<1	175
			RPD %	4	15	2	99	19	#	19	#	3
MW1	15/02/2017	15		7.2	390	540	12	110	<10	110	<10	30
QC300	15/02/2017	15	Duplicate of MW1	7.22	330	534	18	110	<1	110	<1	40
			RPD %	0	17	1	40	0	#	0	#	29
MW50	20/02/2017	15		6.3	4700	8500	36	40	<10	40	<10	180
QC318	20/02/2017	15	Duplicate of MW50	6.26	5250	8450	30	28	<1	28	<1	163
			RPD %	1	11	1	18	35	#	35	#	10
MW50	14/03/2017	16		6.4	4700	7800	52	31	<10	31	<10	180
QC326	14/03/2017	16	Duplicate of MW50	5.8	5500	9100	49	25	<10	25	<10	170
			RPD %	10	16	15	6	21	#	21	#	6
MW1	17/03/2017	16		7.3	570	690	31	160	<10	160	<10	39
QC341	17/03/2017	16	Duplicate of MW1	7.2	530	700	32	160	<10	160	<10	39
			RPD %	1	7	1	3	0	#	0	#	0
MW50	10/04/2017	17		4.6	4800	8600	110	<20	<10	<20	<10	160
QC349	10/04/2017	17	Duplicate of MW50	6.06	6350	7870	27	26	<1	26	<1	162
			RPD %	27	28	9	121	89	#	89	#	1
MW1	11/04/2017	17		7.7	490	420	<10	140	<10	140	<10	33
QC355	11/04/2017	17	Duplicate of MW1	7.7	430	200	10	85	<10	85	<10	32
			RPD %	0	13	71	67	49	#	49	#	3

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well
µS/cm = Microsiemens per centimeter

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 16
Groundwater Analytical Results
Total and Dissolved Metals RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
			LOR	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.001	0.001	0.001	0.005	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.005	
			ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
			DER 2015	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW1	27/01/2016	2		6.6	<0.001	<0.00005	0.008	0.004	1	0.008	0.019	<0.0001	0.002	<0.001	0.017	0.12	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	0.011	<0.0001	<0.001	<0.001	0.004
QC18	27/01/2016	2	Duplicate of MW1	59	0.002	<0.00005	0.059	0.013	6.3	0.073	0.035	0.0005	0.015	0.002	0.039	0.1	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
			RPD %	160	120	#	152	106	145	160	59	164	153	120	79	18	#	#	#	0	#	#	126	#	#	#	156
MW1	16/02/2016	3		3.4	<0.001	<0.00005	0.003	0.002	0.57	0.004	<0.005	<0.0001	<0.001	<0.001	0.01	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
QC40	16/02/2016	3	Duplicate of MW1	4.7	<0.001	0.00005	0.005	0.004	0.68	0.009	0.005	<0.0001	0.001	<0.001	0.012	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
			RPD %	32	#	67	50	67	18	77	67	#	67	#	18	#	#	#	#	0	#	#	#	#	#	#	#
MW1	15/03/2016	4		1.4	<0.001	<0.00005	0.002	0.001	0.13	0.001	<0.005	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
QC62	15/03/2016	4	Duplicate of MW1	18.4	<0.001	<0.00005	0.018	0.004	1.14	0.014	0.006	<0.0001	0.005	<0.01	0.008	0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.001	<0.0001	<0.001	<0.01	<0.005
			RPD %	172	#	#	160	120	159	173	82	#	164	#	67	67	#	#	#	0	#	#	#	#	#	#	#
MW1	11/04/2016	5		4.3	<0.001	<0.00005	0.006	0.002	0.65	0.004	<0.005	<0.0001	0.002	<0.001	0.004	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
QC83	11/04/2016	5	Duplicate of MW1	3.6	<0.001	<0.00005	0.005	0.002	0.37	0.003	<0.005	<0.0001	0.001	<0.001	0.002	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
			RPD %	18	#	#	18	0	55	29	#	#	67	#	67	#	#	#	#	#	#	#	#	#	#	#	#
MW50	12/04/2016	5		0.46	0.002	<0.00005	0.002	<0.001	3.8	0.003	0.022	<0.0001	0.003	<0.001	0.011	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.021	<0.0001	0.003	<0.001	0.009
QC86	12/04/2016	5	Duplicate of MW50	0.89	0.002	0.00006	0.003	0.001	5.5	0.006	0.024	<0.0001	0.003	<0.001	0.013	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.019	<0.0001	0.002	<0.001	0.008
			RPD %	64	0	82	40	67	37	67	9	#	0	#	17	#	#	#	#	#	#	#	10	#	40	#	12
MW1	9/05/2016	6		1.9	<0.001	<0.00005	0.004	0.002	0.25	0.003	<0.005	<0.0001	<0.001	<0.001	0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.001
QC83	9/05/2016	6	Duplicate of MW1	7.5	0.001	<0.00005	0.011	0.004	1.1	0.01	0.005	<0.0001	0.003	<0.001	0.016	<0.05	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.002
			RPD %	119	67	#	93	67	126	108	67	#	143	#	105	#	#	#	#	#	67	#	#	#	#	#	67
MW50	4/05/2016	6		3.3	0.003	0.00005	0.011	0.004	6.5	0.024	0.018	0.0002	0.003	<0.001	0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.002	<0.001	0.004
QC86	4/05/2016	6	Duplicate of MW50	55	0.016	0.00039	0.15	0.043	14	0.34	0.018	0.0021	0.008	0.01	0.02	<0.05	<0.001	0.00027	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.002	<0.001	0.004
			RPD %	177	137	155	173	166	73	174	0	165	91	181	120	#	#	166	#	#	#	#	0	#	0	#	0
MW1	28/06/2016	7		7.2	0.002	<0.00005	0.009	0.004	0.83	0.007	<0.005	<0.0001	0.002	0.001	0.023	0.27	<0.001	<0.00005	0.005	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.004
QC138	28/06/2016	7	Duplicate of MW1	5.8	0.001	<0.00005	0.008	0.003	0.68	0.006	<0.005	<0.0001	0.002	<0.001	0.007	0.13	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
			RPD %	22	67	#	12	29	20	15	#	#	0	67	107	#	#	#	#	67	#	#	#	#	#	#	156
MW50	21/06/2016	7		3.5	0.003	0.00007	-	0.004	7.4	0.029	0.021	0.0002	0.003	0.002	0.012	0.05	<0.001	0.00007	<0.001	<0.001	7.4	<0.001	0.019	<0.0001	0.002	<0.001	0.008
QC121	21/06/2016	7	Duplicate of MW50	23	0.01	0.00009	-	0.025	8.9	0.17	0.022	0.001	0.006	0.009	0.038	<0.05	<0.001	0.00009	<0.001	<0.001	<0.05	<0.001	0.02	<0.0001	0.002	<0.001	0.018
			RPD %	147	108	25	-	145	18	142	5	133	67	127	104	67	#	25	#	#	#	#	5	#	0	#	77
MW1	19/07/2016	8		2.7	<0.001	<0.00005	0.004	0.002	0.4	0.003	<0.005	<0.0001	<0.001	<0.001	<0.005	0.14	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001	0.001
QC157	19/07/2016	8	Duplicate of MW1	3.2	<0.001	<0.00005	0.004	0.002	0.46	0.003	<0.005	<0.0001	0.001	<0.001	<0.005	0.19	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.001
			RPD %	17	#	#	0	0	14	0	#	#	67	#	#	30	#	#	#	#	11	#	#	#	#	#	67
MW50	12/07/2016	8		21	0.007	0.00011	0.053	0.017	6.7	0.13	0.017	0.0007	0.004	0.006	0.025	<0.05	<0.001	<0.00005	<0.001	<0.001	1.2	<0.001	0.016	<0.0001	0.002	<0.001	0.007
QC141	12/07/2016	8	Duplicate of MW50	120	0.023	<0.00005	0.24	0.072	23	0.54	0.02	0.0034	0.013	0.022	0.12	<0.05	0.002	<0.00005	<0.001	<0.001	2.8	<0.001	0.018	<0.0001	0.002	<0.001	0.011
			RPD %	140	107	126	128	124	110	122	16	132	106	114	131	#	120	#	#	#	80	#	12	#	0	#	44

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 16
Groundwater Analytical Results
Total and Dissolved Metals RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved											
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
			ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011
			DER 2015	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE
MW1	25/08/2016	9		2.6	<0.001	<0.00005	0.003	0.002	0.48	0.004	<0.005	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001
QC180	25/08/2016	9	Duplicate of MW1	3.5	<0.001	<0.00005	0.004	0.002	0.52	0.003	<0.005	<0.0001	0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001	<0.001
			RPD %	30	#	#	29	0	8	29	#	#	67	#	0	#	#	#	#	#	0	#	#	#	#	0
MW50	15/08/2016	9		0.79	0.004	<0.00005	0.005	0.001	15	0.007	0.018	0.0011	0.002	<0.001	0.013	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.016	<0.0001	0.002	<0.001
QC159	15/08/2016	9	Duplicate of MW50	0.73	0.005	0.00005	0.005	0.002	22	0.006	0.017	0.0018	0.002	<0.001	0.028	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.016	<0.0001	0.002	<0.001
			RPD %	8	22	67	0	67	38	15	6	48	0	#	73	#	#	#	#	#	#	#	#	#	#	143
MW1	29/09/2016	10		2.6	<0.001	<0.00005	0.004	0.003	0.79	0.006	<0.005	<0.0001	<0.001	<0.001	0.011	0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
QC198	29/09/2016	10	Duplicate of MW1	4.9	0.001	<0.00005	0.006	0.004	1.3	0.009	0.008	<0.0001	0.002	<0.001	0.017	0.11	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
			RPD %	61	67	#	40	29	49	40	105	#	120	#	43	0	#	#	#	#	#	#	#	#	#	#
MW50	28/09/2016	10		4.3	0.004	0.00007	0.015	0.007	6.1	0.046	0.018	0.0003	0.003	0.003	<0.005	<0.05	<0.001	0.00005	<0.001	<0.001	<0.05	<0.001	0.016	<0.0001	0.002	<0.001
QC195	28/09/2016	10	Duplicate of MW50	3.6	0.003	0.00012	0.013	0.006	5	0.043	0.019	0.0002	0.003	0.003	0.005	0.07	<0.001	0.0001	<0.001	<0.001	<0.05	<0.001	0.018	<0.0001	0.002	<0.001
			RPD %	18	29	53	14	15	20	7	5	40	0	0	67	95	#	67	#	#	#	#	12	#	0	#
MW1	24/10/2016	11		0.64	<0.001	<0.00005	0.001	0.002	0.12	<0.001	<0.005	<0.0001	<0.001	0.004	0.01	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
QC227	24/10/2016	11	Duplicate of MW1	0.52	<0.001	<0.00005	0.001	0.002	0.11	<0.001	<0.005	<0.0001	<0.001	0.002	0.009	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
			RPD %	21	#	#	0	0	9	#	#	#	#	67	11	#	#	#	#	0	#	#	#	#	#	67
MW50	24/10/2016	11		4	0.003	0.00015	0.014	0.007	3	0.04	0.018	0.0002	0.003	0.002	0.008	<0.05	<0.001	0.00011	<0.001	<0.001	<0.05	0.003	0.018	<0.0001	0.002	0.001
QC213	24/10/2016	11	Duplicate of MW50	3.92	0.0044	0.0001	0.0115	0.0066	7.57	0.0498	0.0139	0.0003	0.003	0.001	0.005	0.01	0.0014	<0.00005	0.0005	<0.0005	5.04	0.0004	0.0138	<0.0001	0.002	0.0002
			RPD %	2	38	40	20	6	86	22	26	40	0	67	46	86	95	126	0	#	198	153	26	#	0	133
MW1	22/11/2016	12		1	0.007	0.00023	0.005	0.005	0.71	0.004	0.006	0.0003	0.003	0.028	0.023	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.004
QC242	22/11/2016	12	Duplicate of MW1	<0.05	<0.001	<0.00005	0.002	0.002	0.27	0.001	<0.005	<0.0001	<0.001	0.002	0.015	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
			RPD %	190	173	161	86	86	90	120	82	143	143	173	42	#	#	#	#	#	#	#	#	#	#	156
MW50	23/11/2016	12		0.14	<0.001	<0.00005	<0.001	<0.001	0.83	<0.001	0.018	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.002	<0.001
QC248	23/11/2016	12	Duplicate of MW50	0.37	<0.001	<0.00005	0.002	<0.001	1.7	0.002	0.018	<0.0001	0.002	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.002	<0.001
			RPD %	90	#	#	120	#	69	120	0	#	0	#	82	3	#	#	#	#	#	#	0	#	0	#
MW1	13/12/2016	13		0.42	0.001	0.00005	0.001	0.003	0.11	<0.001	<0.005	0.0001	<0.001	0.004	0.015	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.004
QC260a	13/12/2016	13	Duplicate of MW1	0.18	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.015	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
			RPD %	80	67	67	67	40	126	#	#	67	#	156	0	#	#	#	#	#	#	#	#	#	#	156
MW50	14/12/2016	13		0.85	0.001	<0.00005	0.002	<0.001	0.68	0.001	0.018	<0.0001	0.002	<0.001	0.005	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.001	0.001
QC268	14/12/2016	13	Duplicate of MW50	0.96	0.001	<0.00005	0.003	<0.001	0.84	0.003	0.018	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.017	<0.0001	0.001	<0.001
			RPD %	12	0	#	40	#	21	100	0	#	0	#	67	#	67	#	#	#	#	0	#	0	67	#
MW1	17/01/2017	14		0.45	<0.001	<0.00005	0.001	0.002	0.06	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001
QC278	17/01/2017	14	Duplicate of MW1	0.29	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.006
			RPD %	43	#	#	67	67	82	#	#	#	#	#	0	#	#	#	#	0	#	#	#	#	#	82
MW50	18/01/2017	14		1.6	0.002	<0.00005	0.006	<0.001	2.5	0.011	0.015	<0.0001	0.002	0.002	<0.005	<0.05	<0.001	0.00008	<0.001	<0.001	<0.05	<0.001	0.015	<0.0001	0.001	<0.001
QC285	18/01/2017	14	Duplicate of MW50	18.3	0.0055	0.00013	0.0536	0.0102	5.18	0.0759	0.0167	0.00049	0.0055	0.0022	0.007	0.01	0.0015	<0.00005	0.0006	<0.0005	2.54	0.001	0.0154	<0.00004	0.0026	0.0003
			RPD %	168	93	135	160	181	70	149	11	163	93	10	95	86	100	105	18	#	196	#	3	#	89	50

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW= Monitoring well

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 16
Groundwater Analytical Results
Total and Dissolved Metals RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
			LOR	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.001	0.0001	0.001	0.001	0.005	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	
			ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
			DER 2015	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW1	15/02/2017	15		1.1	<0.001	<0.00005	0.01	0.002	0.33	0.003	<0.005	<0.0001	<0.001	<0.001	0.019	1.1	<0.001	<0.00005	0.005	0.002	0.21	0.003	<0.005	<0.0001	<0.001	<0.001	0.014
QC300	15/02/2017	15	Duplicate of MW1	0.217	0.0003	<0.00005	0.0006	0.0015	0.031	0.0002	<0.0005	<0.00004	<0.0005	0.0003	0.005	0.073	0.0003	<0.00005	0.0004	0.0013	0.009	<0.0001	<0.0005	<0.00004	<0.0005	0.0002	0.004
			RPD %	134	50	#	177	29	166	175	#	#	#	50	117	175	50	#	170	42	184	193	#	#	#	86	111
MW50	20/02/2017	15		0.28	0.001	<0.00005	0.001	0.001	3.1	0.01	0.016	<0.0001	0.002	0.001	0.23	0.26	0.002	<0.00005	0.001	0.002	3.1	0.026	0.016	<0.0001	0.002	0.001	0.006
QC318	20/02/2017	15	Duplicate of MW50	8.47	0.0038	0.00006	0.0239	0.0055	5.36	0.0326	0.0166	0.00015	0.0036	0.0011	0.014	<0.005	0.0017	<0.00005	0.0005	<0.0005	3.26	0.0004	0.0162	<0.00004	0.002	0.0003	0.01
			RPD %	187	117	82	184	138	53	106	4	100	57	10	177	196	16	#	67	156	5	194	1	#	0	108	50
MW50	14/03/2017	16		12	0.004	<0.00005	0.029	0.008	3	0.052	0.017	0.0003	0.004	0.009	0.007	<0.05	0.003	0.00011	<0.001	<0.001	<0.05	0.003	0.015	0.0001	0.002	0.011	<0.005
QC326	14/03/2017	16	Duplicate of MW50	11	0.006	0.00014	0.033	0.012	4.3	0.097	0.018	0.0005	0.003	0.015	0.007	<0.05	<0.001	0.00009	<0.001	<0.001	0.14	0.002	0.015	<0.0001	0.002	<0.001	0.006
			RPD %	9	40	139	13	40	36	60	6	50	29	50	0	#	143	20	#	#	139	40	0	67	0	183	82
MW1	17/03/2017	16		0.69	<0.001	<0.00005	0.001	0.003	0.13	<0.001	<0.005	<0.0001	<0.001	<0.001	0.011	<0.05	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006
QC341	17/03/2017	16	Duplicate of MW1	0.71	<0.001	<0.00005	0.005	0.003	0.16	<0.001	<0.005	<0.0001	0.002	<0.001	0.014	<0.05	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006
			RPD %	3	#	#	133	0	21	#	#	#	120	#	24	#	#	#	#	0	#	#	#	#	#	#	0
MW50	10/04/2017	17		2.8	0.002	<0.00005	0.004	<0.001	2.6	0.003	0.014	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.016	<0.0001	0.001	<0.001	<0.005
QC349	10/04/2017	17	Duplicate of MW50	31.8	0.0078	0.00016	0.0798	0.013	6.33	0.113	0.0153	0.00048	0.0074	0.0025	0.009	0.009	0.0011	<0.00005	0.0005	<0.0005	1.15	0.0011	0.0138	<0.00004	0.0022	0.0002	0.011
			RPD %	168	118	146	181	185	84	190	9	162	115	133	113	94	75	#	0	#	191	75	15	#	75	86	126
MW1	11/04/2017	17		0.98	0.002	<0.00005	0.002	0.002	0.21	<0.001	<0.005	<0.0001	0.001	<0.001	0.019	<0.05	0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC355	11/04/2017	17	Duplicate of MW1	0.87	<0.001	<0.00005	0.002	0.002	0.16	<0.001	<0.005	<0.0001	0.001	<0.001	0.011	<0.05	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005
			RPD %	12	120	#	0	0	27	#	#	#	0	#	53	#	67	#	#	0	#	#	#	#	#	#	67

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW= Monitoring well

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations			
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.01	0.5	0.5	0.5	
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
MW1	27/01/2016	2		<0.01	1.6	12	0.06	-	1.6	14	0.15	<0.05	48	4.7	23	
QC18	27/01/2016	2	Duplicate of MW1	<0.01	3	10	0.07	-	3	13	0.06	<0.05	53	4.8	26	
			RPD %	#	61	18	15	#	61	7	86	#	10	2	12	
MW1	16/02/2016	3		<0.01	1.3	8	<0.02	-	1.3	9.3	0.1	<0.05	47	5.1	25	
QC40	16/02/2016	3	Duplicate of MW1	<0.01	1.3	8.1	0.03	-	1.3	9.4	0.2	<0.05	47	5.1	25	
			RPD %	#	0	1	100	#	0	1	67	#	0	0	0	
MW1	15/03/2016	4		<0.01	1.7	15	0.03	15	-	17	0.06	<0.05	56	6.3	36	
QC62	15/03/2016	4	Duplicate of MW1	0.03	5.4	15.4	<0.01	-	-	21	-	0.04	-	-	-	
			RPD %	143	104	3	143	-	-	20	-	46	-	-	-	
MW1	11/04/2016	5		<0.01	1.8	15	0.04	-	1.8	17	<0.05	<0.05	58	7.8	37	
QC83	11/04/2016	5	Duplicate of MW1	0.02	2.3	14	<0.02	-	2.3	16	0.06	<0.05	55	7.4	37	
			RPD %	198	24	7	120	-	24	6	82	#	5	5	0	
MW50	12/04/2016	5		0.28	0.3	0.04	<0.02	<0.05	-	0.3	<0.05	<0.05	27	160	37	
QC86	12/04/2016	5	Duplicate of MW50	0.27	0.3	0.05	<0.02	0.05	-	0.4	7.5	<0.05	31	190	46	
			RPD %	4	0	22	#	67	-	29	199	#	14	17	22	
MW1	9/05/2016	6		0.05	1.7	6.3	0.1	6.4	1.6	8.1	0.12	<0.05	29	4.5	34	
QC83	9/05/2016	6	Duplicate of MW1	0.07	0.6	6.4	0.1	6.5	0.5	7.1	0.17	<0.05	30	4.7	33	
			RPD %	33	96	2	0	2	105	13	34	#	3	4	3	
MW50	4/05/2016	6		0.25	0.3	0.02	<0.02	<0.05	<0.2	0.3	<0.05	<0.05	29	180	38	
QC86	4/05/2016	6	Duplicate of MW50	0.2	0.7	0.06	<0.02	0.06	0.5	0.8	0.08	<0.05	30	180	38	
			RPD %	22	80	100	#	82	192	91	105	#	3	0	0	
MW1	28/06/2016	7		0.02	<0.2	2.8	<0.02	2.8	<0.2	2.8	0.09	<0.05	29	3.1	18	
QC138	28/06/2016	7	Duplicate of MW1	0.03	0.4	2.7	<0.02	2.7	0.4	3.1	0.1	<0.05	27	3.2	18	
			RPD %	40	120	4	#	4	120	10	11	#	7	3	0	
MW50	21/06/2016	7		0.39	0.5	0.06	<0.02	0.07	<0.2	0.6	0.29	<0.05	29	180	35	
QC121	21/06/2016	7	Duplicate of MW50	0.26	4	0.11	<0.02	0.12	3.7	4.1	1.6	<0.05	29	190	36	
			RPD %	40	156	59	#	53	189	149	139	#	0	5	3	
MW1	19/07/2016	8		0.05	0.7	0.38	<0.02	0.39	0.6	1.1	0.08	<0.05	17	3.2	18	
QC157	19/07/2016	8	Duplicate of MW1	0.03	0.4	0.34	<0.02	0.36	0.4	0.8	0.09	<0.05	17	3.3	19	
			RPD %	50	55	11	#	8	40	32	12	#	0	3	5	
MW50	12/07/2016	8		0.84	0.84	0.05	<0.02	0.06	<0.2	0.9	0.28	<0.05	31	180	36	
QC141	12/07/2016	8	Duplicate of MW50	3.5	4.2	0.05	<0.02	0.05	0.7	4.3	0.2	<0.05	30	170	35	
			RPD %	123	133	0	#	18	150	131	33	#	3	6	3	
MW1	25/08/2016	9		0.02	<0.2	2.8	<0.02	2.8	<0.2	2.8	0.11	0.06	27	3.7	22	
QC180	25/08/2016	9	Duplicate of MW1	0.03	0.2	2.8	<0.02	2.8	0.2	3	0.08	0.06	26	3.7	24	
			RPD %	40	67	0	#	0	67	7	#	#	4	0	9	
MW50	15/08/2016	9		0.39	0.4	0.03	<0.02	<0.05	<0.2	0.4	0.62	<0.05	31	200	42	
QC159	15/08/2016	9	Duplicate of MW50	0.25	0.3	<0.02	<0.02	<0.05	<0.2	0.3	0.66	<0.05	32	200	42	
			RPD %	44	29	100	#	#	#	29	#	#	3	0	0	
MW1	29/09/2016	10		<0.01	0.3	3	<0.02	3	0.3	3.3	0.08	<0.05	23	2.9	19	
QC198	29/09/2016	10	Duplicate of MW1	<0.01	0.4	3	<0.02	3	0.4	3.4	0.09	<0.05	24	3	19	
			RPD %	#	29	0	#	0	29	3	12	#	4	3	0	
MW50	28/09/2016	10		0.19	<0.2	0.02	<0.02	<0.05	<0.2	<0.2	0.26	<0.05	29	180	37	
QC195	28/09/2016	10	Duplicate of MW50	0.18	<0.2	0.03	<0.02	<0.05	<0.2	<0.2	0.21	<0.05	29	180	38	
			RPD %	5	#	40	#	#	#	#	21	#	0	0	3	
MW1	24/10/2016	11		0.02	1.2	7.7	<0.02	7.8	1.2	9	0.12	0.07	36	3.8	20	
QC227	24/10/2016	11	Duplicate of MW1	0.03	1.1	8.2	<0.02	8.3	1.1	9.4	0.09	0.07	35	3.8	21	
			RPD %	40	9	6	#	6	9	4	29	0	3	0	5	
MW50	24/10/2016	11		0.2	1.6	0.92	<0.02	0.93	1.4	2.5	0.21	<0.05	31	190	1700	
QC213	24/10/2016	11	Duplicate of MW50	0.22	1	0.04	<0.01	-	-	1	-	0.01	30	187	51	
			RPD %	10	46	183	#	-	-	86	-	86	3	2	188	
MW1	22/11/2016	12		0.02	<0.2	12	<0.02	12	<0.2	12	<0.05	<0.05	55	5.8	27	
QC242	22/11/2016	12	Duplicate of MW1	0.02	1.2	12	<0.02	12	1.2	13	<0.05	<0.05	50	5.3	26	
			RPD %	0	169	0	#	0	169	8	#	#	10	9	4	
MW50	23/11/2016	12		0.16	0.3	0.03	<0.02	<0.05	0.2	0.3	<0.05	<0.05	30	170	36	
QC248	23/11/2016	12	Duplicate of MW50	0.18	0.2	0.03	<0.02	<0.05	0.1	0.3	<0.05	<0.05	29	170	35	
			RPD %	12	40	0	#	#	67	0	#	#	3	0	3	
MW1	13/12/2016	13		0.02	2.7	23	<0.02	23	2.7	26	0.34	0.07	74	7.2	27	
QC260a	13/12/2016	13	Duplicate of MW1	0.02	2	22	<0.02	22	2	24	<0.05	<0.05	73	7.2	27	
			RPD %	0	30	4	#	4	30	8	173	95	1	0	0	
MW50	14/12/2016	13		0.16	0.3	<0.02	<0.02	<0.05	<0.2	0.3	<0.05	<0.05	28	180	38	
QC268	14/12/2016	13	Duplicate of MW50	0.18	0.3	<0.02	<0.02	<0.05	<0.2	0.3	0.1	<0.05	28	180	41	
			RPD %	12	0	#	#	#	#	0	120	#	0	0	8	
MW1	17/01/2017	14		0.05	2.1	13	0.03	13	15	2	0.12	0.07	60	6.6	22	
QC278	17/01/2017	14	Duplicate of MW1	<0.01	2	24	<0.02	24	26	2	0.12	0.07	56	6.4	21	
			RPD %	164	5	59	108	59	54	0	0	0	7	3	5	
MW50	18/01/2017	14		0.16	0.3	<0.02	<0.02	<0.05	0.3	<0.2	0.12	<0.05	28	180	40	
QC285	18/01/2017	14	Duplicate of MW50	0.19	0.5	0.05	<0.01	-	0.6	-	0.2	0.02	27	191	56	
			RPD %	17	50	133	#	-	67	-	50	22	4	6	33	
MW1	15/02/2017	15		0.02	1.7	15	<0.02	15	17	1.7	0.18	<0.05	56	5.3	16	
QC300	15/02/2017	15	Duplicate of MW1	0.04	2	16.5	0.02	-	18.5	-	0.08	0.07	68	6	21	
			RPD %	67	16	10	67	-	8	-	77	95	19	12	27	
MW50	20/02/2017	15		0.82	0.8	<0.02	<0.02	<0.05	0.8	<0.2	0.1	<0.05	29	170	35	
QC318	20/02/2017	15	Duplicate of MW50	0.6	0.8	0.06	<0.01	-	0.9	-	0.15	0.02	30	177	47	
			RPD %	31	0	143	#	-	12	-	40	22	3	4	29	
MW50	14/03/2017	16														

Table 18
Surface Water Analytical Results
ASS and General Parameters RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Biological		General Parameters					Acid Sulfate Parameters					
				Thermotolerant Coliforms	E. Coli	pH (Lab)	TDS	Turbidity	Electrical conductivity (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate) as CaCO3	Alkalinity (Carbonate) as CaCO3	Sulphate as S	Chloride
			Units	mpn/100ML	cfu/100 ml	pH Units	mg/L	NTU	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	1	1	0.01	10	1	1	10	20	1	20	10	5	1
			1. ANZECC Lowland	NE	1	6.5 - 8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	NE	NE	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower- 60 Upper- > 180	NE	NE	NE	NE	NE
SWL2-1	28/01/2016	2		350	23	7.2	230	1.6	380	<10	29	<10	29	<10	13	70
QC21	28/01/2016	2		70	11	7.6	210	2.7	370	<10	27	<10	27	<10	13	69
			RPD %	133	71	5	9	51	3	#	7	#	7	#	0	1
QC22	28/01/2016	2		-	-	7.44	225	0.6	338	-	25	<1	25	<1	-	65
			RPD %	-	-	3	2	91	12	-	15	#	15	#	-	7
SWL2_1	16/02/2016	3		23	8	7	210	1.3	380	<10	-	-	29	<10	13	66
QC41	16/02/2016	3		70	2	7	210	1	380	<10	-	-	26	<10	13	66
			RPD %	101	120	0	0	26	0	#	#	#	11	#	0	0
QC42	16/02/2016	3		-	-	7.42	216	1	336	8	24	<1	24	<1	-	68
			RPD %	-	-	6	3	26	12	46	-	-	19	#	-	3
SW2-1	15/03/2016	4		140	<1	7.1	210	1.8	360	<10	23	<10	23	<10	13	69
QC63	15/03/2016	4		79	7	7.3	220	1.8	390	<10	-	<10	33	<10	13	71
			RPD %	56	173	3	5	0	0	#	#	#	36	#	0	3
QC64	15/03/2016	4		-	-	7.26	224	1.3	337	-	25	<1	25	<1	-	58
			RPD %	-	-	2	6	32	7	-	8	#	8	#	-	17
SWL16-2	5/05/2016	6		1700	230	6.9	510	5.8	580	<10	49	<10	49	<10	28	120
QC106	5/05/2016	6		2400	250	6.8	500	6.7	610	<10	47	<10	47	<10	27	130
			RPD %	34	8	1	2	14	5	#	4	#	4	#	4	8
QC107	5/05/2016	6		-	260	6.78	482	-	647	-	38	<1	38	<1	-	126
			RPD %	-	12	2	6	-	11	-	25	#	25	#	-	5
SWL17-2	5/05/2016	6		<10	<10	3.9	330	7.9	320	38	<20	<10	<20	<10	5.6	77
QC111	5/05/2016	6		<10	<10	3.8	330	9.2	340	40	<20	<10	<20	<10	5.4	78
			RPD %	#	#	3	0	15	6	5	#	#	#	#	4	1
QC112	5/05/2016	6		-	1	4.14	274	-	338	-	<1	<1	<1	<1	-	78
			RPD %	-	133	6	19	-	5	-	#	#	#	#	-	1
SWL17-1	13/07/2016	8		52	52	3.6	570	1.8	680	73	<20	<10	<20	<10	6.7	170
QC147	13/07/2016	8		63	41	3.6	520	1.8	690	74	<20	<10	<20	<10	6.1	160
			RPD %	19	#	0	9	0	1	1	#	#	#	#	9	6
QC148	13/07/2016	8		-	39	3.68	568	0.9	647	78	<1	<10	<1	<1	-	165
			RPD %	-	29	2	0	67	5	7	#	#	#	#	-	3
SWL2-1	25/08/2016	9		55	10	7.2	150	1	270	<10	23	<10	23	<10	12	55
QC181	25/08/2016	9		34	16	7.1	160	1.1	260	<10	26	<10	26	<10	10	52
			RPD %	47	46	1	6	10	4	#	#	#	#	#	18	6
QC182	25/08/2016	9		-	15	7.02	186	0.8	290	5	19	<1	19	<1	-	51
			RPD %	-	100	3	21	22	7	0	62	#	62	#	-	8
SWL4-3	3/10/2016	10		390	12	6.9	360	2.7	540	<10	<20	<10	<20	<10	25	130
QC207	3/10/2016	10		200	13	6.9	370	2.6	560	<10	<20	<10	<20	<10	26	130
			RPD %	64	8	0	3	4	4	#	#	#	#	#	4	0
QC208	3/10/2016	10		210	210	6.76	-	2.8	-	4	12	<1	12	<1	-	152
			RPD %	60	178	2	#	4	#	22	18	#	#	#	#	16
SWL1-3	4/10/2016	10		140	20	6.9	190	4.1	360	<10	53	<10	53	<10	9.6	63
QC209	4/10/2016	10		150	31	6.9	190	3.4	360	<10	43	<10	43	<10	9.8	64
			RPD %	7	43	0	0	19	0	#	21	#	21	#	2	2
QC210	4/10/2016	10		64	64	7.11	-	2	-	-	37	<1	37	<1	-	63
			RPD %	75	105	3	#	69	#	#	36	#	36	#	#	0

Notes:

NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
SWL= Surface water location
µS/cm = Microsiemens per centimetre
NTU = Nephelometric Turbidity Units

Investigation Levels:

1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 18
Surface Water Analytical Results
ASS and General Parameters RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Biological		General Parameters					Acid Sulfate Parameters					
				Thermotolerant Coliforms	E. Coli	pH (Lab)	TDS	Turbidity	Electrical conductivity (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate) as CaCO3	Alkalinity (Carbonate) as CaCO3	Sulphate as S	Chloride
			Units	mpn/100ML	cfu/100 ml	pH Units	mg/L	NTU	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	1	1	0.01	10	1	1	10	20	1	20	10	5	1
			1. ANZECC Lowland	NE	1	6.5 - 8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	NE	NE	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower- 60 Upper- > 180	NE	NE	NE	NE	NE
SWL16-2	26/10/2016	11		230	200	6.8	290	13	400	11	34	<10	34	<10	<5	94
QC223	26/10/2016	11		310	63	6.9	300	26	390	10	35	<10	35	<10	<5	90
			RPD %	30	104	1	3	67	3	10	3	#	3	#	#	4
QC224	26/10/2016	11		330	330	7.12	292	44.6	366	13	41	<1	41	<1	24	86
			RPD %	36	49	5	1	110	9	17	19	#	19	#	162	9
SWL1-1	22/11/2016	12		-	-	7.3	240	-	420	<10	51	<10	51	<10	36	80
QC240	22/11/2016	12		210	20	7.2	250	3.6	430	<10	51	<10	51	<10	37	77
			RPD %	-	-	1	4	-	2	#	0	#	0	#	3	4
QC241	22/11/2016	12		1800	1800	7.46	244	2.7	428	6	42	<1	42	<1	-	91
			RPD %	-	-	2	2	-	2	18	19	#	19	#	-	13
SWL2-1	22/11/2016	12		39	6	7.8	230	<1	390	<10	65	<10	65	<10	34	63
QC238	22/11/2016	12		170	7	7.7	230	1.3	390	<10	65	<10	65	<10	36	63
			RPD %	125	15	1	0	89	0	#	0	#	0	#	6	0
QC239	22/11/2016	12		460	460	7.6	228	1.1	391	3	54	<1	54	<1	-	71
			RPD %	169	195	3	1	75	0	50	18	#	18	#	-	12
SWL20_2	18/01/2017	14		1400	180	7.4	4000	9.8	6800	<10	68	<10	68	<10	160	2200
QC289	18/01/2017	14		1300	52	7.4	4100	8.4	6900	<10	65	<10	65	<10	150	2100
			RPD %	7	110	0	2	15	1	#	5	#	5	#	6	5
QC290	18/01/2017	14		-	63	7.56	-	8.5	7170	5	61	<1	61	<1	-	2100
			RPD %	-	96	2	-	14	5	0	11	#	11	#	-	5
SWL1-1	15/02/2017	15		>2400	110	7	130	1.7	270	<10	37	<10	37	<10	32	49
QC301	15/02/2017	15		2000	120	7	140	1.9	260	<10	33	<10	33	<10	23	41
			RPD %	18	9	0	7	11	4	#	11	#	11	#	33	18
QC302	15/02/2017	15		2600	2600	6.97	134	1.8	253	3	30	<1	30	<1	24	48
			RPD %	8	184	0	3	6	7	50	21	#	21	#	29	2
SWL4-1	15/02/2017	15		5500	30	6.5	400	53	650	<10	<20	<10	<20	<10	73	140
QC303	15/02/2017	15		6500	10	6.4	390	26	680	12	20	<10	20	<10	75	130
			RPD %	17	100	2	3	68	5	82	67	#	67	#	3	7
QC304	15/02/2017	15		1300	1300	6.54	356	42.2	630	10	16	<1	16	<1	77	147
			RPD %	124	191	1	12	23	3	67	46	#	46	#	5	5
SWL16-3	16/02/2017	15		5500	190	7.1	390	37	490	15	47	<10	47	<10	21	130
QC307	16/02/2017	15		2900	190	7.1	390	120	520	<10	49	<10	49	<10	20	120
			RPD %	62	0	0	0	106	6	100	4	#	4	#	5	8
QC308	16/02/2017	15		1300	1300	6.9	346	81.4	481	12	40	<1	40	<1	26	119
			RPD %	124	149	3	12	75	2	22	16	#	16	#	21	9
SWL16-1	15/03/2017	16		490	110	7.1	260	4	400	<10	43	<10	43	<10	18	74
QC331	15/03/2017	16		4900	320	6.6	250	540	400	21	40	<10	40	<10	24	74
			RPD %	164	98	7	4	197	0	123	7	#	7	#	29	0
QC332	15/03/2017	16		1400	1400	6.89	276	377	439	27	30	<1	30	<1	24	80
			RPD %	96	171	3	6	196	9	138	36	#	36	#	29	8
SWL20-1	10/04/2017	17		120	62	7.2	2600	10	4800	14	33	<10	33	<10	75	1300
QC352	10/04/2017	17		240	120	7.1	2600	9.2	4400	12	26	<10	26	<10	76	1400
			RPD %	67	64	1	0	8	9	15	24	#	24	#	1	7
QC353	10/04/2017	17		62	62	6.98	2700	9.5	3990	8	27	<1	27	<1	76	1300
			RPD %	64	0	3	4	5	18	55	20	#	20	#	1	0

Notes:
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µS/cm = Microsiemens per centimetre
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Investigation Levels:
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3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 19
 Surface Water Analytical Results
 Total Dissolved Metals RPD - QA/QC
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved										
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.01	0.001	0.0002	-	0.001	0.05	0.001	0.005	0.0001	0.001	0.005
			1. ANZECC Lowland	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011
			3. DER (2015)	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE
SWL2-1	28/01/2016	2		0.22	<0.001	<0.00005	<0.001	<0.001	0.11	<0.001	<0.005	<0.0001	<0.001	<0.001	0.009	0.19	<0.001	<0.00005	<0.001	<0.001	0.08	<0.001	<0.005	<0.0001	<0.001
QC21	28/01/2016	2		0.25	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	<0.001	<0.001	0.007	0.26	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	<0.005	<0.0001	<0.001
			RPD %	13	#	#	#	#	9	#	#	#	#	#	25	31	#	#	#	#	22	#	#	#	#
QC22	28/01/2016	2		0.27	<0.001	<0.00005	0.001	<0.001	0.11	<0.001	0.002	<0.0001	<0.001	<0.001	0.005	0.26	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	0.001	<0.0001	<0.001
			RPD %	20	#	#	67	#	0	#	22	#	#	#	113	31	#	#	#	#	22	#	86	#	67
SWL2_1	16/02/2016	3		0.26	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005	0.19	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001
QC41	16/02/2016	3		0.31	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	<0.001	<0.001	0.007	0.26	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001
			RPD %	18	#	#	#	#	0	#	#	#	#	#	33	31	#	#	#	#	0	#	#	#	#
QC42	16/02/2016	3		0.278	<0.0002	<0.00005	0.0011	0.0028	0.117	0.0004	0.0022	<0.0001	<0.0005	<0.0002	0.007	0.24	<0.0002	<0.00005	0.0007	<0.0005	0.089	<0.0001	0.0015	<0.0001	<0.0005
			RPD %	7	#	#	75	139	3	22	13	#	#	#	33	23	#	#	33	#	1	#	50	#	0
SW2-1	15/03/2016	4		0.16	<0.001	<0.00005	<0.001	<0.001	0.11	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005	0.13	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001
QC63	15/03/2016	4		0.21	<0.001	<0.00005	0.001	<0.001	0.11	<0.001	<0.005	<0.0001	<0.001	<0.001	0.005	0.21	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	<0.001
			RPD %	27	#	#	67	#	0	#	#	#	#	#	0	47	#	#	#	#	0	#	#	#	0
QC64	15/03/2016	4		0.28	<0.001	<0.00005	<0.001	<0.001	0.11	<0.001	0.002	<0.0001	<0.001	<0.001	0.005	0.26	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	0.002	<0.0001	<0.001
			RPD %	55	#	#	#	#	0	#	22	#	#	#	67	67	#	#	#	#	11	#	22	#	46
SWL16-2	5/05/2016	6		0.2	0.002	<0.00005	<0.001	0.001	0.92	<0.001	0.012	<0.0001	0.002	<0.001	0.011	0.16	0.002	<0.00005	<0.001	<0.001	0.48	<0.001	0.011	<0.0001	0.001
QC106	5/05/2016	6		0.22	0.002	<0.00005	<0.001	0.001	0.91	<0.001	0.013	<0.0001	0.002	<0.001	0.013	0.2	0.002	<0.00005	<0.001	<0.001	0.49	<0.001	0.01	<0.0001	0.002
			RPD %	10	0	#	#	0	1	#	8	#	0	#	17	22	0	#	#	#	2	#	10	#	18
QC107	5/05/2016	6		0.27	0.002	<0.0001	<0.001	<0.001	0.85	<0.001	0.013	<0.0001	0.002	<0.001	0.011	0.27	0.002	<0.0001	<0.001	<0.001	0.89	<0.001	0.014	<0.0001	0.002
			RPD %	30	0	#	#	67	8	#	8	#	0	#	0	51	0	#	#	#	60	#	24	#	57
SWL17-2	5/05/2016	6		0.37	<0.001	<0.0005	<0.001	<0.001	0.21	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.37	<0.001	<0.00005	<0.001	<0.001	0.21	<0.001	<0.005	<0.0001	<0.001
QC111	5/05/2016	6		0.51	<0.001	<0.00005	<0.001	<0.001	0.28	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.41	<0.001	<0.00005	<0.001	<0.001	0.2	<0.001	<0.005	<0.0001	<0.001
			RPD %	32	#	#	#	#	29	#	#	#	#	#	10	#	#	#	#	#	5	#	#	#	0
QC112	5/05/2016	6		0.57	<0.001	<0.0001	<0.001	<0.001	0.29	<0.001	0.002	<0.0001	<0.001	<0.001	<0.005	0.53	<0.001	<0.0001	<0.001	<0.001	0.26	<0.001	0.001	<0.0001	<0.001
			RPD %	43	#	#	#	#	32	#	22	#	#	#	#	36	#	#	#	#	21	#	86	#	86
SWL17-1	13/07/2016	8		0.87	<0.001	<0.00005	0.001	0.002	0.59	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.81	<0.001	<0.00005	<0.001	0.001	0.49	<0.001	<0.005	<0.0001	<0.001
QC147	13/07/2016	8		0.86	<0.001	<0.00005	<0.001	0.001	0.53	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.83	<0.001	<0.00005	<0.001	0.001	0.52	<0.001	<0.005	<0.0001	<0.001
			RPD %	1	#	#	67	67	11	#	#	#	#	#	2	#	#	#	#	0	6	#	#	#	0
QC148	13/07/2016	8		0.92	<0.001	<0.00005	0.002	0.001	0.55	<0.001	0.002	<0.0001	<0.001	<0.001	<0.005	0.98	<0.001	<0.00005	<0.001	0.001	0.54	<0.001	0.002	<0.0001	<0.001
			RPD %	6	#	#	67	67	7	#	22	#	#	#	19	#	#	#	#	0	10	#	22	#	86
SWL2-1	25/08/2016	9		0.15	<0.001	<0.00005	<0.001	0.00005	0.08	<0.001	<0.005	<0.0001	<0.001	<0.001	0.007	0.14	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001
QC181	25/08/2016	9		0.17	<0.001	<0.00005	0.003	<0.001	0.07	<0.001	<0.005	<0.0001	0.001	<0.001	0.006	0.15	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001
			RPD %	13	#	#	143	#	13	#	#	#	66	#	15	7	#	#	#	#	#	#	#	#	0
QC182	25/08/2016	9		0.233	<0.0002	<0.00005	0.0006	0.0006	0.066	0.0001	0.0016	<0.0001	<0.0005	<0.0002	0.005	0.213	<0.0002	<0.00005	0.0006	<0.0005	0.051	<0.0001	0.0015	<0.0001	<0.0005
			RPD %	43	#	#	18	18	19	#	44	#	#	#	33	41	#	#	#	#	68	#	50	#	18
SWL4-3	3/10/2016	10		0.15	<0.001	<0.00005	0.001	<0.001	0.33	<0.001	<0.005	<0.0001	<0.001	<0.001	0.012	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001
QC207	3/10/2016	10		0.14	<0.001	<0.00005	<0.001	<0.001	0.32	<0.001	0.01	<0.0001	<0.001	<0.001	0.01	0.07	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	0.007	<0.0001	<0.001
			RPD %	7	#	#	67	#	3	#	120	#	#	#	18	95	#	#	#	#	113	#	95	#	113
QC208	3/10/2016	10		0.17	0.0003	<0.00005	0.0008	0.0009	0.335	0.0001	0.0103	<0.0001	0.0006	<0.0002	0.009	0.134	0.0003	<0.00005	0.0007	0.0008	0.242	0.0001	0.0092	<0.0001	0.0006
			RPD %	13	50	#	22	57	2	133	122	#	18	#	29	137	50	#	33	46	163	133	115	#	126
SWL1-3	4/10/2016	10		0.06	<0.001	<0.00005	<0.001	0.001	0.18	<0.001	0.011	<0.0001	<0.001	<0.001	0.019	<0.05	<								

Table 19
 Surface Water Analytical Results
 Total Dissolved Metals RPD - QA/QC
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
			LOR	0.01	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.01	0.001	0.0002	-	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.005	
			1. ANZECC Lowland	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
			2. ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
			3. DER (2015)	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
SWL16-2	26/10/2016	11		0.2	<0.001	<0.00005	0.006	<0.001	0.64	<0.001	0.013	<0.0001	<0.001	<0.001	<0.005	0.15	<0.001	<0.00005	<0.001	<0.001	0.34	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC223	26/10/2016	11		0.19	<0.001	<0.00005	0.001	<0.001	0.59	<0.001	0.005	<0.0001	<0.001	<0.001	<0.005	0.17	<0.001	<0.00005	<0.001	<0.001	0.36	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
			RPD %	5	#	#	143	#	8	#	135	#	#	#	13	#	#	#	#	6	#	#	#	#	#	#	
QC224	26/10/2016	11		0.38	0.001	<0.00005	0.0012	0.001	1.42	0.0005	0.0253	<0.00004	0.0009	0.0003	0.005	0.22	0.0008	<0.00005	0.0009	0.0007	0.621	0.0001	0.0111	<0.00004	0.0007	<0.0002	0.003
			RPD %	62	67	#	133	67	76	0	64	#	57	#	67	38	46	#	57	33	58	133	126	#	33	#	18
SWL1-1	22/11/2016	12		0.1	0.001	<0.00005	<0.001	0.001	0.2	<0.001	0.008	<0.0001	0.001	0.004	0.012	0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.007	<0.0001	<0.001	<0.001	0.008
QC240	22/11/2016	12		0.96	<0.001	<0.00005	<0.001	0.001	0.19	<0.001	0.008	<0.0001	0.001	<0.001	0.016	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
			RPD %	162	67	#	#	0	5	#	0	#	0	156	29	67	#	#	#	#	#	95	#	#	#	#	105
QC241	22/11/2016	12		0.103	0.0004	<0.00005	0.0006	0.0009	0.142	0.0007	0.0079	<0.00004	0.0012	<0.0002	0.009	0.081	0.0004	<0.00005	0.0004	0.0011	0.099	0.0004	0.0072	<0.00004	0.0009	<0.0002	0.009
			RPD %	3	86	#	18	11	34	33	1	#	18	190	29	47	170	#	22	75	198	22	3	#	57	#	12
SWL2-1	22/11/2016	12		0.19	<0.001	<0.00005	<0.001	0.001	0.19	<0.001	<0.005	<0.0001	<0.001	0.002	<0.005	0.11	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC238	22/11/2016	12		0.13	<0.001	<0.00005	<0.001	<0.001	0.18	<0.001	<0.005	<0.0001	<0.001	0.001	0.006	0.11	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
			RPD %	38	#	#	#	67	5	#	#	#	#	67	82	0	#	#	#	#	0	#	#	#	#	#	#
QC239	22/11/2016	12		0.172	0.0002	<0.00005	0.0007	0.001	0.132	0.0002	0.0025	<0.00004	0.0009	<0.0002	0.009	0.159	0.0002	<0.00005	0.0005	0.0006	0.111	0.0001	0.0016	<0.00004	<0.0005	<0.0002	0.004
			RPD %	10	86	#	151	0	36	86	0	#	57	181	113	36	86	#	0	18	45	133	44	#	#	#	46
SWL20_2	18/01/2017	14		<0.05	<0.001	<0.00005	0.001	<0.001	2.2	<0.001	0.027	<0.0001	0.003	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	1.5	<0.001	0.024	<0.0001	0.002	<0.001	<0.005
QC289	18/01/2017	14		<0.05	<0.001	<0.00005	<0.001	<0.001	2.2	<0.001	0.027	<0.0001	0.003	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	1.5	<0.001	0.025	<0.0001	0.002	<0.001	<0.005
			RPD %	#	#	#	67	0	0	#	0	#	0	#	#	#	#	#	#	#	#	#	4	#	0	#	#
QC290	18/01/2017	14		0.071	0.0006	<0.00005	0.0009	0.0006	2.72	0.0012	0.029	<0.00004	0.0039	0.0004	0.002	0.054	0.0006	<0.00005	0.0006	<0.0005	2.29	0.0011	0.026	<0.00004	0.0034	0.0003	0.002
			RPD %	174	18	#	11	#	21	#	7	#	26	#	22	166	18	#	18	#	42	75	8	#	52	50	#
SWL1-1	15/02/2017	15		0.05	<0.001	<0.00005	<0.001	0.002	0.17	0.001	0.01	<0.0001	<0.001	<0.001	0.031	<0.05	<0.001	<0.00005	<0.001	0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.019
QC301	15/02/2017	15		0.06	<0.001	<0.00005	<0.001	0.002	0.2	0.001	0.01	<0.0001	<0.001	<0.001	0.033	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	0.022
			RPD %	18	#	#	#	0	16	0	0	#	#	#	6	#	#	#	#	67	#	#	#	#	#	#	15
QC302	15/02/2017	15		0.077	0.0005	<0.00005	0.0005	0.0016	0.163	0.0012	0.0118	<0.00004	0.0008	<0.0002	0.031	0.053	0.0004	<0.00005	0.0004	0.0013	0.125	0.0009	0.0105	<0.00004	0.0007	<0.0002	0.029
			RPD %	43	0	#	0	22	4	18	17	#	46	#	0	72	22	#	22	26	133	57	123	#	33	#	42
SWL4-1	15/02/2017	15		0.3	<0.001	<0.00005	0.001	0.002	4	0.001	0.016	<0.0001	<0.001	<0.001	0.015	0.3	<0.001	<0.00005	0.001	0.004	4	0.002	0.016	<0.0001	<0.001	<0.001	0.015
QC303	15/02/2017	15		0.26	<0.001	<0.00005	0.001	0.003	2.9	0.001	0.015	<0.0001	<0.001	<0.001	0.021	0.44	0.001	<0.00005	0.001	0.003	2.9	0.002	0.015	<0.0001	<0.001	<0.001	0.021
			RPD %	14	#	#	0	40	32	0	6	#	#	#	33	38	67	#	0	29	32	0	6	#	#	#	33
QC304	15/02/2017	15		0.519	0.001	<0.00005	0.0015	0.0028	4.55	0.0021	0.016	<0.00004	0.0009	<0.0002	0.021	0.114	0.0004	<0.00005	0.0007	0.0012	0.251	0.0001	0.0145	<0.00004	0.0007	<0.0002	0.012
			RPD %	53	67	#	40	33	13	71	0	#	57	#	33	90	22	#	35	108	176	181	10	#	33	#	22
SWL16-3	16/02/2017	15		0.43	0.002	<0.00005	0.001	0.002	2	<0.001	0.026	<0.0001	<0.001	<0.001	0.02	0.44	0.002	<0.00005	0.001	0.001	2.2	<0.001	0.026	<0.0001	<0.001	<0.001	0.014
QC307	16/02/2017	15		0.48	0.002	<0.00005	0.001	0.002	2.3	<0.001	0.027	<0.0001	<0.001	<0.001	0.022	0.45	0.002	<0.00005	0.001	0.002	1.9	<0.001	0.025	<0.0001	<0.001	<0.001	0.01
			RPD %	11	0	#	0	0	14	#	4	#	#	#	10	2	0	#	0	67	15	#	4	#	#	#	33
QC308	16/02/2017	15		1.89	0.0028	<0.00005	0.0051	0.0046	3.66	0.0024	0.0322	<0.00004	0.0015	0.0005	0.02	0.244	0.002	<0.00005	0.0012	0.0007	1.56	0.0002	0.0232	<0.00004	0.0008	0.0002	0.002
			RPD %	126	33	#	134	79	59	131	21	#	100	#	0	57	0	#	18	35	34	86	11	#	46	#	150
SWL16-1	15/03/2017	16		0.13	<0.001	<0.0002	<0.001	<0.001	0.56	<0.001	0.006	<0.0001	<0.001	<0.001	<0.005	0.1	<0.001	<0.0002	<0.001	<0.001	0.38	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC331	15/03/2017	16		7.3	0.006	<0.0002	0.017	0.028	14	0.017	0.058	<0.0001	0.004	0.002	0.12	0.49	0.002	<0.0002	<0.001	0.001	2.6	<0.001	0.022	<0.0001	0.001	<0.001	0.09
			RPD %	193	169	#	189	193																			

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations & Anions					
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Total)	Nitrogen (Organic)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	Sodium		
				Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				LOR	0.01	0.1	0.01	0.01	0.01	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	
				1. ANZECC Lowland	NE	NE	NE	NE	0.15	1.2	NE	0.065	0.04	NE	NE	NE	NE	
				2. ANZECC FW 95%	0.9	NE	NE	NE	0.1	1.5	NE	0.06	0.03	NE	NE	NE	NE	
				3. DER (2015)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
SWL2-1	28/01/2016	2		0.52	0.5	<0.1	<0.1	-	0.5	<0.2	<0.05	<0.05	6.4	8	2.1	-		
QC21	28/01/2016	2		0.04	0.4	0.07	<0.02	-	0.5	0.4	<0.05	<0.05	6.5	8.1	2.1	-		
RPD %				171	22	33	#	-	0	-	#	#	2	1	0	-		
QC22	28/01/2016	2		0.1	0.7	<0.01	<0.01	-	0.7	-	-	<0.01	-	-	-	-		
RPD %				135	33	#	#	-	33	-	-	#	-	-	-	-		
SWL2_1	16/02/2016	3		0.01	0.3	0.04	<0.02	-	0.4	0.3	<0.05	<0.05	6.7	7.9	2.3	48		
QC41	16/02/2016	3		<0.01	0.4	<0.02	<0.02	-	0.4	0.4	<0.05	<0.05	6.8	7.9	2.5	49		
RPD %				67	29	120	#	#	0	29	#	#	1	0	8	2		
QC42	16/02/2016	3		0.02	0.5	<0.01	<0.01	-	0.5	-	-	<0.01	-	-	-	-		
RPD %				67	50	156	#	#	22	#	#	#	-	-	-	-		
SW2-1	15/03/2016	4		<0.01	0.5	<0.02	<0.02	<0.05	0.5	-	<0.05	<0.05	6.5	8.2	2.3	46		
QC63	15/03/2016	4		<0.01	0.5	<0.02	<0.02	<0.05	0.5	-	<0.05	<0.05	5.9	7.5	2.3	46		
RPD %				#	0	#	#	#	0	#	#	#	10	9	0	0		
QC64	15/03/2016	4		0.01	0.6	0.03	<0.01	-	0.6	-	-	<0.01	-	-	-	-		
RPD %				67	18	100	#	-	18	-	-	#	-	-	-	-		
SWL16-2	5/05/2016	6		30	2	0.13	0.02	0.16	2.2	2	0.41	0.39	25	11	19	65		
QC106	5/05/2016	6		70	1.5	0.16	<0.02	0.16	1.7	1.4	0.6	0.56	26	11	18	69		
RPD %				80	29	21	67	0	26	35	38	36	4	0	5	6		
QC107	5/05/2016	6		40	2.5	0.14	<0.01	-	2.6	-	-	0.91	-	-	-	-		
RPD %				29	22	7	120	-	17	-	-	80	-	-	-	-		
SWL17-2	5/05/2016	6		50	1.3	<0.02	<0.02	<0.05	1.3	1.2	0.07	<0.05	2.5	6.1	1.4	32		
QC111	5/05/2016	6		60	1.7	<0.02	0.02	<0.05	1.7	1.6	0.17	<0.05	2.5	5.9	1.5	31		
RPD %				18	27	#	67	#	27	29	83	#	0	3	7	3		
QC112	5/05/2016	6		20	2.3	0.02	<0.01	-	2.3	-	-	0.05	-	-	-	-		
RPD %				86	56	67	#	-	56	-	-	67	-	-	-	-		
SWL17-1	13/07/2016	8		0.08	2	0.03	<0.02	<0.05	2	1.9	0.07	<0.05	4.7	9.6	1.2	72		
QC147	13/07/2016	8		0.11	1.8	0.03	<0.02	<0.05	1.8	1.7	0.09	<0.05	4.7	8.6	1.4	65		
RPD %				32	11	0	#	#	11	11	25	#	0	11	15	10		
QC148	13/07/2016	8		0.03	3.1	0.02	<0.01	-	3.1	-	-	0.03	-	-	-	-		
RPD %				91	43	40	#	#	43	#	#	18	#	#	#	#		
SWL2-1	25/08/2016	9		0.04	<0.2	0.08	<0.02	0.08	<0.2	<0.2	<0.05	<0.05	5.6	7.5	1.9	37		
QC181	25/08/2016	9		0.06	<0.2	0.1	<0.02	0.11	<0.2	<0.6	<0.05	<0.05	5.7	7.4	1.9	38		
RPD %				40	#	22	#	32	#	#	#	#	2	1	0	3		
QC182	25/08/2016	9		0.04	0.6	0.05	<0.01	-	-	0.6	-	<0.01	-	-	-	-		
RPD %				0	143	46	#	-	-	143	-	#	-	-	-	-		
SWL4-3	3/10/2016	10		0.02	<0.2	0.23	<0.02	0.23	<0.2	0.2	<0.05	<0.05	21	14	5	71		
QC207	3/10/2016	10		0.02	0.5	0.23	<0.02	0.23	0.5	0.7	<0.05	<0.05	22	14	5	73		
RPD %				0	133	0	#	0	133	111	#	#	5	0	0	3		
QC208	3/10/2016	10		0.04	0.5	0.23	0.02	-	-	0.8	-	<0.01	21	14	6	77		
RPD %				67	133	0	67	#	#	120	#	#	0	0	18	8		
SWL1-3	4/10/2016	10		0.03	0.5	0.23	0.02	0.25	0.4	0.7	<0.05	<0.05	14	8	4	38		
QC209	4/10/2016	10		0.03	0.5	0.26	<0.02	0.26	0.5	0.8	<0.05	<0.05	14	8.1	3.5	38		
RPD %				0	0	12	67	4	22	13	#	#	0	1	13	0		
QC210	4/10/2016	10		0.06	0.5	0.27	<0.01	-	-	0.8	-	<0.01	14	7	4	42		
RPD %				67	0	16	120	#	#	13	#	#	0	13	0	10		
SWL16-2	26/10/2016	11		0.02	2.2	0.15	0.02	0.17	2.4	2.2	0.74	0.65	16	7.5	10	45		
QC223	26/10/2016	11		0.02	2.4	0.16	0.02	0.19	2.6	0.3	0.96	0.66	16	7.6	10	45		
RPD %				0	9	6	0	11	8	152	26	2	0	1	0	0		
QC224	26/10/2016	11		0.04	1.7	0.13	<0.01	-	1.8	0.13	-	0.59	15	7	12	45		
RPD %				67	26	14	0	-	29	178	-	10	6	7	18	0		

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
SWL = Surface water location

Investigation Levels:
1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for SW Australia - Slightly disturbed ecosystems
2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 20
Surface Water Analytical Results
Nutrients, Cations, Anions RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations & Anions				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Total)	Nitrogen (Organic)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	Sodium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.1	0.01	0.01	0.01	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC Lowland	NE	NE	NE	NE	0.15	1.2	NE	0.065	0.04	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	0.9	NE	NE	NE	0.1	1.5	NE	0.06	0.03	NE	NE	NE	NE	NE
			3. DER (2015)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
SWL1-1	22/11/2016	12		<0.01	0.4	0.16	<0.02	0.16	0.4	0.6	<0.05	<0.05	17	9.8	4.4	46	
QC240	22/11/2016	12		0.02	0.4	0.16	<0.02	0.16	0.4	0.6	<0.05	<0.05	17	10	4.5	47	
			RPD %	120	0	0	#	0	0	0	#	#	0	2	2	2	
QC241	22/11/2016	12		0.04	1	0.19	<0.01	-	-	1.2	0.08	<0.01	16	9	6	6	
			RPD %	156	86	17	#	-	-	67	105	#	6	9	31	154	
SWL2-1	22/11/2016	12		0.05	0.4	<0.02	<0.02	<0.05	0.4	0.4	<0.05	<0.05	20	10	3.5	39	
QC238	22/11/2016	12		0.02	0.7	0.02	<0.02	<0.05	0.7	0.7	<0.05	<0.05	20	10	3.4	39	
			RPD %	86	55	67	#	#	55	55	#	#	0	0	3	0	
QC239	22/11/2016	12		0.06	0.6	0.02	<0.01	-	-	0.6	<0.01	<0.01	19	9	4	44	
			RPD %	18	40	67	#	-	-	40	#	#	5	11	13	12	
SWL1-1	14/12/2016	13		0.02	1	<0.02	<0.02	<0.05	1	1	<0.05	<0.05	20	10	49	5.2	
QC261	14/12/2016	13		<0.01	0.2	<0.02	<0.02	<0.05	0.2	0.2	<0.05	<0.05	14	95	740	13	
			RPD %	120	133	#	#	#	133	133	#	#	35	162	175	86	
QC262	14/12/2016	13		0.02	0.2	<0.01	<0.01	-	-	0.2	-	<0.01	14	99	778	15	
			RPD %	0	133	#	#	-	-	133	-	#	35	163	176	97	
SWL20_2	18/01/2017	14		1.3	2.8	0.03	<0.02	<0.05	1.5	2.8	0.06	<0.05	24	140	29	1400	
QC289	18/01/2017	14		1.3	3.1	0.03	<0.02	<0.05	1.8	3.1	0.09	<0.05	24	140	27	1200	
			RPD %	0	10	0	#	#	18	10	40	#	0	0	7	15	
QC290	18/01/2017	14		0.82	4.6	0.02	<0.01	-	-	4.6	-	0.04	-	-	-	-	
			RPD %	45	49	40	#	-	-	49	-	46	-	-	-	-	
SWL1-1	15/02/2017	15		0.05	<0.2	0.14	<0.02	0.16	<0.2	<0.2	<0.05	<0.05	10	4.8	2.5	22	
QC301	15/02/2017	15		0.03	0.3	0.14	<0.02	0.16	0.5	0.3	<0.05	<0.05	10	4.9	2.5	22	
			RPD %	50	100	0	#	0	133	100	#	#	0	2	0	0	
QC302	15/02/2017	15		0.07	0.4	0.17	<0.01	-	0.6	-	0.04	<0.01	11	5	3	31	
			RPD %	33	120	19	#	-	143	-	46	#	10	4	18	34	
SWL4-1	15/02/2017	15		0.14	0.6	0.11	<0.02	0.12	0.7	0.5	0.05	<0.05	19	12	5.6	65	
QC303	15/02/2017	15		0.12	1.2	0.05	<0.02	0.06	1.3	1.1	0.08	<0.05	20	12	5.1	67	
			RPD %	15	67	75	#	67	60	75	46	#	5	0	9	3	
QC304	15/02/2017	15		0.14	0.6	0.07	<0.01	-	0.7	-	0.05	<0.01	22	14	6	84	
			RPD %	0	0	44	#	-	0	-	0	#	15	15	7	26	
SWL16-3	16/02/2017	15		0.04	3.3	<0.02	<0.02	<0.05	3.3	3.3	0.96	0.74	18	7.8	10	52	
QC307	16/02/2017	15		0.05	6.2	<0.02	<0.02	<0.05	6.2	6.1	1.1	0.66	18	7.6	11	50	
			RPD %	22	61	#	#	#	61	60	14	11	0	3	10	4	
QC308	16/02/2017	15		0.14	3.1	0.19	<0.01	-	3.3	-	1.05	0.74	22	9	15	62	
			RPD %	111	6	180	#	-	0	-	9	0	20	14	40	18	
SWL16-1	15/03/2017	16		0.02	0.9	<0.02	0.03	<0.05	0.85	0.83	0.68	0.64	18	7.2	12	43	
QC331	15/03/2017	16		0.07	1.5	<0.02	<0.02	<0.05	1.5	1.4	2.8	0.16	30	11	13	46	
			RPD %	111	50	#	100	#	55	51	122	120	50	42	8	7	
QC332	15/03/2017	16		0.02	16.7	<0.01	<0.01	-	16.7	-	2.47	0.14	17	6	13	43	
			RPD %	0	180	#	143	-	181	-	114	128	6	18	8	0	
SWL20-1	10/04/2017	17		0.05	0.5	<0.02	<0.02	<0.05	0.5	0.4	0.08	<0.05	11	77	11	630	
QC352	10/04/2017	17		0.07	0.6	<0.02	<0.02	<0.05	0.5	0.4	0.08	<0.05	11	77	11	670	
			RPD %	33	18	#	#	#	0	0	0	#	0	0	0	6	
QC353	10/04/2017	17		0.07	1	<0.01	<0.01	-	1	-	0.03	<0.01	12	80	16	774	
			RPD %	33	67	#	#	#	67	#	91	#	9	4	37	21	

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 SWL= Surface water location

Investigation Levels:
 1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
 2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code	
Round Two	MW1	QC18	Duplicate	MGT	Sulphate as S	93	2	
					Nitrogen (Organic)	61	5	
					Aluminium	160	2	
					Arsenic	120	4	
					Chromium	152	2	
					Copper	106	2	
					Iron	145	2	
					Lead	160	2	
					Manganese	59	2	
					Mercury	164	4	
					Nickel	153	2	
					Selenium	120	4	
					Zinc	79	2	
					Manganese (dissolved)	126	4	
					Zinc (dissolved)	156	4	
Round Three	MW1	QC40	Duplicate	MGT	Kjeldahl Nitrogen Total	61	5	
					Phosphate total (P)	86	5	
					Alkalinity (Bicarbonate as CaCO ₃)	48	5	
					Aluminium	32	2	
					Cadmium	67	4	
					Chromium	50	5	
					Copper	67	2	
					Lead	77	2	
					Manganese	67	4	
					Nickel	67	4	
Round Four	MW1	QC62	Duplicate	ALS	Nitrite	100	4	
					Phosphate (total)	67	1	
					Aluminium	171	2	
					Chromium	160	5	
					Copper	120	2	
					Iron	159	5	
					Lead	173	2	
					Manganese	82	4	
					Nickel	164	4	
	Zinc	67	2					
	Round Five	MW1	QC83	Duplicate	MGT	Aluminium (Filtered)	67	4
						Ammonia as N	143	4
						Kjeldahl Nitrogen Total	104	5
						Nitrite	143	4
						Acidity (as CaCO ₃)	67	4
		MW50	QC86	Duplicate	MGT	Iron	55	5
						Nickel	67	1,5
						Zinc	67	3
						Ammonia	198	4
						Nitrite	120	4
	Phosphate total (P)					82	4	
	Acidity (asCaCO ₃)					38	5	
	Aluminium					64	2	
	Cadmium					82	4	
					Copper	67	4	
					Iron	37	2	
					Lead	67	2	
					Nitrate & Nitrite	67	4	
					Phosphate total (P)	199	4	

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Six	MW1	QC83	Duplicate	MGT	Aluminium	119	2
					Arsenic	67	4
					Chromium	93	5
					Copper	67	2
					Iron	126	2
					Lead	108	3
					Manganese	67	4
					Nickel	143	4
					Zinc	105	3
					Dissolved Iron	67	4
					Dissolved Zinc	67	5
					Kjeldahl Nitrogen Total	96	5
	Nitrogen (organic)	105	5				
	MW50	QC86	Duplicate	MGT	Aluminium	177	2
					Arsenic	137	3
					Cadmium	155	3
					Chromium	173	5
					Copper	166	2
					Iron	73	2
					Lead	174	2
					Mercury	165	3
					Nickel	91	3
					Selenium	181	4
					Zinc	120	3
Cadmium (Filtered)					166	4	
Kjeldahl Nitrogen Total	80	5					
Nitrate	100	5					
Nitrate and Nitrite	82	4					
Nitrogen (organic)	192	4					
Nitrogen (total)	91	5					
Phosphate total (P)	105	4					
Round Seven	MW1	QC138	Duplicate	MGT	Arsenic	67	2
					Selenium	67	4
					Zinc	107	3
					Dissolved Copper	67	3
					Dissolved Zinc	156	4
					Kjeldahl Nitrogen Total	120	4
					Nitrogen Organic	120	4
	MW50	QC121	Duplicate	MGT	Ammonia	40	5
					Alkalinity (total) as CaCO3	63	2
					Alkalinity (Bicarbonate as CaCO3)	63	5
					Aluminium	147	2
					Arsenic	108	3
					Copper	145	2
					Lead	142	2
					Mercury	133	3
					Nickel	67	5
					Selenium	127	3
					Zinc	104	2
					Dissolved Aluminium	67	4
					Dissolved Zinc	77	2
					Kjeldahl Nitrogen Total	156	5
					Nitrate	59	3
					Nitrate and Nitrite	53	5
					Nitrogen Organic	189	4
Nitrogen Total	149	3					
Phosphate Total	139	2					

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Eight	MW1	QC157	Duplicate	MGT	Nickel	67	4
					Dissolved Zinc	67	4
					Ammonia	50	5
					Kjeldahl Nitrogen Total	55	5
	MW50	QC141	Duplicate	MGT	Aluminium	140	2
					Arsenic	107	3
					Cadmium	126	4
					Chromium	128	5
					Copper	124	2
					Iron	110	5
					Lead	122	2
					Mercury	132	3
					Nickel	106	3
					Selenium	114	3
					Zinc	131	2
					Dissolved Arsenic	120	4
					Dissolved Iron	80	5
					Ammonia	123	5
Kjeldahl Nitrogen Total	133	5					
Nitrogen (Organic)	150	4					
Nitrogen (Total)	131	5					
Round Nine	MW1	QC180	Duplicate	MGT	Acidity (as CaCO ₃)	105	4
					Total Kjeldahl Nitrogen	67	4
					Organic Nitrogen	67	4
					Aluminium	30	2
	MW50	QC159	Duplicate	MGT	Nickel	67	4
					Acidity (as CaCO ₃)	85	5
					Ammonia	44	5
					Nitrate	100	4
					Copper	67	4
					Iron	38	5
Mercury	48	4					
Zinc	73	4					
Dissolved zinc	143	3					
Round Ten	MW1	QC198	Duplicate	MGT	Acidity	75	4
					Total Aluminium	61	2
					Total Arsenic	67	4
					Total Iron	49	5
	MW50	QC195	Duplicate	MGT	Total Manganese	105	1
					Total Nickel	120	4
					Total Nickel	53	1
					Total Zinc	67	4
Dissolved Aluminium	95	3					
Dissolved Cadmium	67	1					

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Eleven	MW1	QC227	Duplicate	MGT	Sulphate as S	110	4
					Sulfate : Chloride	48	2
					Total Selenium	67	1
					Dissolved Zinc	67	3
	MW50	QC213	Duplicate	MGT	Sulphate as S	90	5
					Sulfate : Chloride	89	2
					Total Iron	86	5
					Total Selenium	67	1
					Dissolved Aluminium	86	4
					Dissolved Arsenic	95	4
					Dissolved Cadmium	126	4
					Dissolved Iron	198	3
					Dissolved Lead	153	1
					Dissolved Selenium	133	1
					Dissolved Zinc	100	1
					Nitrate (as N)	183	3
					Nitrogen (Total)	86	3
					Reactive Phosphorus as P	86	4
Potassium	188	5					
Round Twelve	MW1	QC242	Duplicate	MGT	Kjeldahl Nitrogen Total	169	4
					Nitrogen (Organic)	169	4
					Total Aluminium	190	4
					Total Arsenic	173	4
					Total Cadmium	161	4
					Total Chromium	86	1
					Total Copper	86	3
					Total Iron	90	1
					Total Lead	120	3
					Total Manganese	82	4
					Total Mercury	143	4
					Total Nickel	143	4
					Total Selenium	173	3
					Selenium (Filtered)	156	4
	MW50	QC248	Duplicate	MGT	Nitrogen (Organic)	67	1
					Total Aluminium	90	3
					Total Chromium	120	4
					Total Iron	69	5
					Total Lead	120	4
					Total Zinc	82	4

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code					
Round Thirteen	MW1	QC260a	Duplicate	MGT	Kjeldahl Nitrogen Total	30	5					
					Nitrogen (Organic)	30	5					
					Phosphate total (P)	173	4					
					Reactive Phosphorus as P	95	4					
					Sulphate as S	49	5					
					Total Aluminium	80	2					
					Total Arsenic	67	4					
					Total Cadmium	67	4					
					Total Chromium	67	4					
					Total Iron	126	4					
					Total Mercury	67	4					
					Total Selenium	156	4					
					Dissolved Selenium	156	4					
					Phosphate total (P)	100	4					
Round Thirteen	MW50	QC268	Duplicate	MGT	Total Lead	100	1					
					Total Zinc	67	4					
					Dissolved Arsenic	67	4					
					Dissolved Selenium	67	4					
					Round Fourteen	MW1	QC278	Duplicate	ALS	Chromium	67	4
										Copper	67	3
										Iron	82	4
										Zinc (Filtered)	82	4
										Ammonia as N	164	4
										Nitrate (as N)	59	2
										Nitrite (as N)	108	4
										Nitrate & Nitrite (as N)	59	2
										Nitrogen (Organic)	54	2
										Acidity (as CaCO3)	99	3
Round Fourteen	MW50	QC285	Duplicate	ALS						Aluminium	168	2
										Arsenic	93	1, 5
										Cadmium	135	4
										Chromium	160	1, 5
					Copper	181	4					
					Iron	70	2					
					Lead	149	3					
					Mercury	163	4					
					Nickel	93	1, 5					
					Zinc	95	4					
					Aluminium (Filtered)	86	4					
					Arsenic (Filtered)	100	4					
					Cadmium (Filtered)	105	4					
					Iron (Filtered)	196	4					
Nickel (Filtered)	89	1, 5										
Selenium (Filtered)	50	4										
Kjeldahl Nitrogen Total	50	2										
Nitrate (as N)	133	4										
Nitrogen (Organic)	67	2										
Phosphate total (P)	50	5										
Potassium	33	2										

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Round Fifteen	MW1	QC300	Duplicate	ALS	Aluminium	134	3
					Arsenic	50	4
					Chromium	177	1, 5
					Iron	166	1, 5
					Lead	175	1, 5
					Selenium	50	4
					Zinc	117	3
					Aluminium (Filtered)	175	3
					Arsenic (Filtered)	50	4
					Chromium (Filtered)	170	1, 5
					Iron (Filtered)	184	1, 5
					Lead (Filtered)	193	4
					Selenium (Filtered)	86	4
					Zinc (Filtered)	111	3
	Ammonia as N	67	1, 5				
	Nitrite (as N)	67	4				
	Phosphate total (P)	77	5				
	Reactive Phosphorus as P	95	2				
	MW50	QC318	Duplicate	ALS	Aluminium	187	3
					Arsenic	117	1, 5
					Cadmium	82	4
					Chromium	184	1, 5
					Copper	138	1, 5
					Iron	53	2
					Lead	106	3
					Mercury	100	4
					Nickel	57	1, 5
					Zinc	177	3
Aluminium (Filtered)					196	4	
Chromium (Filtered)					67	1, 5	
Copper (Filtered)					156	4	
Lead (Filtered)					194	3	
Selenium (Filtered)	108	1, 5					
Zinc (Filtered)	50	1, 5					
Ammonia as N	31	5					
Nitrate (as N)	143	4					
Round Sixteen	MW50	QC326	Duplicate	MGT	Cadmium	139	4
					Copper	40	3
					Iron	36	2
					Lead	60	3
					Mercury	50	1, 5
					Selenium	50	1, 5
					Arsenic (Filtered)	143	4
	Iron (Filtered)	139	4				
	Mercury (Filtered)	67	4				
	Selenium (Filtered)	183	4				
	Zinc (Filtered)	82	4				
	Kjeldahl Nitrogen Total	100	2				
	Nitrogen (Organic)	80	2				
	Nitrogen (Total)	120	4				
MW1	QC341	Duplicate	MGT	Chromium	133	2	
				Nickel	120	4	
				Ammonia as N	67	1, 5	

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4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.

Table 21
Groundwater Analytical Results
RPD Explanation
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
	Round Seventeen	MW50	QC349	Duplicate	ALS	Acidity (as CaCO ₃)	121
Alkalinity (total) as CaCO ₃						89	2
Alkalinity (Bicarbonate as CaCO ₃)						89	4
Aluminium						168	2
Arsenic						118	1, 5
Cadmium						146	4
Chromium						181	1, 5
Copper						185	4
Iron						84	2
Lead						190	5
Mercury						162	4
Nickel						115	1, 5
Selenium						133	4
Zinc						113	4
Aluminium (Filtered)						94	4
Arsenic (Filtered)						75	4
Iron (Filtered)						191	4
Lead (Filtered)						75	4
Nickel (Filtered)						75	1, 5
Selenium (Filtered)						86	4
Zinc (Filtered)						126	4
Ammonia as N		38	5				
Kjeldahl Nitrogen Total		133	4				
Nitrate (as N)		120	5				
Nitrogen (Organic)		133	4				
Phosphate total (P)		86	5				
Acidity (as CaCO ₃)		67	4				
MW1	QC355	Duplicate	ALS	Electrical conductivity *(lab)	71	5	
				Arsenic	120	4	
				Zinc	53	3	
				Arsenic (Filtered)	67	3	
				Zinc (Filtered)	67	4	

Explanation Codes:

1. Low analyte concentrations have exaggerated the percentage differences with respect to small total concentration differences. The calculated RPD values are not considered to affect the integrity of the results as both results remain below assessment criteria (where available).
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4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.

Table 22
Surface Water RPD Explanation Summary - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
2	SWL2-1	QC21	Duplicate	MGT	Thermotolerant Coliforms	133	5
					E Coli	71	2
					Turbidity	51	5
					Aluminium (Filtered)	31	2
					Ammonia as N	171	5
		QC22	Triplicate	ALS	Turbidity	91	5
					Chromium	67	4
					Zinc	113	4
					Aluminium (Filtered)	31	2
					Manganese (Filtered)	86	4
	SWL6-1	QC36	Duplicate	MGT	Ammonia as N	135	5
					Thermotolerant Coliforms	185	5
					E Coli	67	4
					Aluminium	100	2
					Zinc	93	2
		QC37	Triplicate	ALS	Aluminium (Filtered)	120	4
					Zinc (Filtered)	138	3
					Phosphate (Total)	120	4
					Acidity (as CaCO ₃)	100	4
					Alkalinity (total) as CaCO ₃	45	5
3	SWL2-1	QC41	Duplicate	MGT	Alkalinity (Bicarbonate as CaCO ₃)	45	5
					Zinc	46	4
					Aluminium (Filtered)	82	4
					Iron (Filtered)	70	1
					Ammonia as N	120	4
	QC42	Triplicate	ALS	Thermotolerant Coliforms	101	5	
				E Coli	120	2	
				Aluminium (dissolved)	31	2	
				Ammonia as N	67	4	
				Nitrate (as N)	120	4	
4	SWL2-1	QC63	Duplicate	MGT	Chromium	75	4
					Copper	139	4
					Chromium (dissolved)	33	4
					Manganese (dissolved)	50	4
					Ammonia as N	67	5
	QC64	Triplicate	ALS	Kjeldahl Nitrogen Total	50	5	
				Nitrate (as N)	156	4	
				Thermotolerant Coliforms	56	5	
				E Coli	173	4	
				Alkalinity (Bicarbonate as CaCO ₃)	36	5	
5	SWL2-1	QC64	Triplicate	ALS	Chromium	67	4
					Aluminium (dissolved)	47	2
					Turbidity	32	5
					Aluminium	55	2
					Zinc	67	4
6	SWL2-1	QC64	Triplicate	ALS	Aluminium (dissolved)	67	2
					Ammonia as N	67	4
					Nitrate	100	4

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Table 22
Surface Water RPD Explanation Summary - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
6	SWL16-2	QC106	Duplicate	MGT	Thermotolerant Coliforms	34	5
					Nickel (dissolved)	67	1,5
					Ammonia as N	80	5
					Nitrite (as N)	67	4
					Nitrogen (Organic)	35	5
					Phosphate (Total)	38	5
		Reactive Phosphorous	36	1,5			
		QC107	Triplicate	ALS	Aluminium	30	2
					Copper	67	4
					Aluminium (dissolved)	51	2
					Iron (dissolved)	60	5
					Nickel (dissolved)	67	1,5
					Zinc (dissolved)	57	2
					Nitrite (as N)	120	4
Reactive Phosphorous	80				5		
6	SWL17-2	QC111	Duplicate	MGT	Aluminium	32	2
					Nitrite (as N)	67	4
					Phosphate (Total)	83	1,5
		QC112	Triplicate	ALS	E Coli	133	4
					Aluminium	43	2
					Aluminium (dissolved)	36	2
					Manganese (dissolved)	86	4
					Zinc (dissolved)	86	4
					Ammonia as N	86	5
					Kjeldahl Nitrogen Total	56	5
					Nitrate	67	4
					Nitrogen (total)	56	2
					Reactive Phosphorous	67	4
					Chromium	67	4
8	SWL17-1	QC147	Duplicate	MGT	Copper	67	3
					Ammonia as N	32	5
		QC148	Triplicate	ALS	Turbidity	67	5
					Chromium	67	5
					Copper	67	3
					Dissolved zinc	86	4
					Ammonia as N	91	5
					Kjeldahl Nitrogen Total	43	5
					Nitrogen Total	43	2
					9	SWL2-1	QC181
E. Coli	46	5					
Chromium	143	4					
Nickel	66	4					
QC182	Triplicate	ALS	Alkalinity (Bicarbonate as CaCO3)	62			2
			Alkalinity (total) as CaCO3	62			2
			E. Coli	100			5
			Aluminium	43			4
			Lead	67			4
			Dissolved iron	68			4
			Kjeldahl Nitrogen Total	146			4
			Nitrogen (Organic)	143			4

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Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
10	SWL4-3	QC207	Duplicate	MGT	Thermotolerant Coliforms	64	5
					Total Chromium	67	4
					Total Manganese	120	4
					Dissolved Aluminium	95	3
					Dissolved Iron	113	4
					Dissolved Manganese	95	4
					Dissolved Zinc	113	4
					Kjeldahl Nitrogen Total	133	4
					Nitrogen (Total)	133	4
		Nitrogen (Organic)	111	1			
		QC208	Triplicate	ALS	Thermotolerant Coliforms	60	5
					E. Coli	178	2
					Total Arsenic	50	4
					Total Copper	57	4
					Total Lead	133	4
					Total Manganese	122	4
					Dissolved Aluminium	137	4
	Dissolved Arsenic				50	4	
	Dissolved Iron				163	4	
	Dissolved Lead				133	4	
	Dissolved Manganese				115	4	
	Dissolved Zinc				126	4	
	Ammonia as N				67	1	
	Kjeldahl Nitrogen Total				133	4	
	Nitrite (as N)	67	4				
	Nitrogen (Organic)	120	1				
	SWL1-3	QC209	Duplicate	MGT	E. Coli	43	2
					Nitrite (as N)	67	4
		QC210	Triplicate	ALS	Thermotolerant Coliforms	75	5
					E. Coli	105	2
					Turbidity	69	5
					Total Aluminium	50	2
					Total Lead	67	4
Total Manganese					84	1	
Dissolved Aluminium	105	4					
Dissolved Iron	156	4					
Dissolved Manganese	164	4					
Ammonia as N	67	1					
Nitrite (as N)	120	4					

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Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
11	SWL16-2	QC223	Duplicate	MGT	Thermotolerant Coliforms	30	5
					E. Coli	104	2
					TDS	67	5
					Nitrogen (Organic)	152	1
					Total Chromium	143	1
		Total Manganese	135	4			
		QC224	Triplicate	ALS	Thermotolerant Coliforms	36	5
					E. Coli	49	2
					TDS	110	5
					Sulphate as S	162	4
					Ammonia as N	67	1
					Nitrogen (Organic)	178	1
					Total Aluminium	62	2
					Total Arsenic	67	4
					Total Chromium	133	1
					Total Copper	67	4
					Total Iron	76	1
					Total Manganese	64	1
					Total Nickel	57	4
					Total Zinc	67	4
Dissolved Aluminium	38				2		
Dissolved Chromium	57	4					
Dissolved Iron	58	1					
Dissolved Lead	133	4					
Dissolved Manganese	126	4					

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Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
12	SWL1-1	QC240	Duplicate	MGT	Ammonia as N	120	4
					Total Aluminium	162	2
					Total Arsenic	67	4
					Total Selenium	156	4
					Dissolved Aluminium	67	4
		Dissolved Manganese	95	4			
		Dissolved Zinc	105	3			
		Ammonia as N	156	4			
		Kjeldahl Nitrogen Total	86	1			
		Nitrogen (Organic)	67	1			
	Phosphate total (P)	105	3				
	Potassium	31	5				
	Sodium	154	5				
	Total Arsenic	86	1				
	Total Selenium	190	4				
	Dissolved Arsenic	170	4				
	Dissolved Copper	75	4				
	Dissolved Iron	198	4				
	Dissolved Nickel	57	4				
	Thermotolerant Coliforms	125	5				
	Turbidity	89	4				
	Ammonia as N	86	1				
	Kjeldahl Nitrogen Total	55	1				
	Nitrate (as N)	67	4				
	Nitrogen (Total)	55	1				
	Nitrogen (Organic)	55	1				
	Total Aluminium	38	2				
	Total Copper	67	4				
	Total Selenium	67	1				
	Total Zinc	82	4				
	Thermotolerant Coliforms	169	5				
	E. Coli	195	5				
	Turbidity	75	4				
	Acidity (as CaCO3)	50	4				
	Nitrate (as N)	67	4				
	Total Arsenic	86	4				
	Total Chromium	151	4				
	Total Lead	86	4				
	Total Nickel	57	4				
	Total Selenium	181	4				
Total Zinc	113	3					
Dissolved Aluminium	36	2					
Dissolved Arsenic	86	4					
Dissolved Lead	133	4					

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Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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December 2015 to April 2017



Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
13	SWL1-1	QC261	Duplicate	MGT	Ammonia as N	120	4
					Kjeldahl Nitrogen Total	133	1
					Nitrogen (Total)	133	1
					Nitrogen (Organic)	133	1
					Calcium	35	5
					Magnesium	162	5
					Potassium	175	5
					Sodium	86	5
					Thermotolerant Coliforms	135	5
					E. Coli	165	3
					TDS	166	5
					Turbidity	93	5
					Electrical conductivity *(lab)	168	5
					Alkalinity (total) as CaCO3	149	4
					Alkalinity (Bicarbonate as CaCO3)	149	4
					Sulphate as S	127	5
					Chloride	177	5
					Total Aluminium	105	3
					Total Copper	67	2
					Total Iron	104	1
					Total Lead	67	4
	Total Nickel	67	4				
	Total Zinc	149	3				
	Dissolved Manganese	38	1				
	Dissolved Nickel	67	4				
	Dissolved Zinc	113	3				
	QC262	Triplicate	ALS	Kjeldahl Nitrogen Total	133	1	
				Nitrogen (Organic)	133	1	
				Calcium	35	5	
				Magnesium	163	5	
				Potassium	176	5	
				Sodium	97	5	
				Thermotolerant Coliforms	45	5	
				E. Coli	45	2	
				TDS	168	5	
				Turbidity	79	5	
				Electrical conductivity *(lab)	168	5	
				Acidity (as CaCO3)	46	4	
				Alkalinity (total) as CaCO3	154	3	
				Alkalinity (Bicarbonate as CaCO3)	154	5	
				Sulphate as S	124	5	
				Chloride	177	5	
Total Aluminium				60	2		
Total Chromium				50	4		
Total Copper				156	3		
Total Iron				128	1		
Total Lead				67	4		
Total Nickel	109	4					
Total Zinc	178	3					
Dissolved Aluminium	41	4					
Dissolved Iron	67	4					
Dissolved Manganese	57	1					
Dissolved Nickel	100	4					
Dissolved Zinc	179	3					
14	SWL20_1	QC289	Duplicate	MGT	E. Coli	110	2
		QC290	Triplicate	ALS	Chromium	67	4
					E. Coli	96	2
					Aluminium	174	4
					Aluminium (Filtered)	166	4
					Iron (Filtered)	42	2
					Lead (Filtered)	75	4
					Nickel (Filtered)	52	1, 5
					Selenium (Filtered)	50	4
					Ammonia as N	45	2
					Kjeldahl Nitrogen Total	49	2
Nitrogen (Organic)	49	2					

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
15	SWL1-1	QC301	Duplicate	MGT	Copper (Filtered)	67	1, 5
					Ammonia as N	50	1, 5
					Kjeldahl Nitrogen Total	100	4
					Nitrogen (Total)	133	4
					Nitrogen (Organic)	100	4
		QC302	Triplicate	ALS	E. Coli	184	2
					Acidity (as CaCO ₃)	50	4
					Aluminium (Filtered)	72	4
					Iron (Filtered)	133	4
					Lead (Filtered)	57	4
	Manganese (Filtered)				123	4	
	Kjeldahl Nitrogen Total				120	4	
	Nitrogen (Total)				143	4	
	Sodium				34	2	
	E. Coli				100	2	
	SWL4-1	QC303	Duplicate	MGT	Turbidity	68	2
					Acidity (as CaCO ₃)	82	4
					Alkalinity (total) as CaCO ₃	67	4
					Alkalinity (Bicarbonate as CaCO ₃)	67	4
					Iron	32	2
					Zinc	33	2
					Aluminium (Filtered)	38	2
					Arsenic (Filtered)	67	4
					Iron (Filtered)	32	2
					Kjeldahl Nitrogen Total	67	2
		QC304	Triplicate	ALS	Nitrate (as N)	75	2
					Nitrate & Nitrite (as N)	67	3
					Nitrogen (Total)	60	3
					Nitrogen (Organic)	75	2
					Thermotolerant Coliforms	124	2
					E. Coli	191	2
					Acidity (as CaCO ₃)	67	4
					Aluminium	53	2
					Arsenic	67	4
					Lead	71	1, 5
	SWL16-3	QC307	Duplicate	MGT	Nickel	57	4
					Zinc	33	2
					Aluminium (Filtered)	90	2
					Copper (Filtered)	108	3
					Iron (Filtered)	176	2
		QC308	Triplicate	ALS	Lead (Filtered)	181	1, 5
					Thermotolerant Coliforms	62	2
					Turbidity	106	2
					Acidity (as CaCO ₃)	100	4
					Copper (Filtered)	67	3
	Kjeldahl Nitrogen Total				61	2	
	Nitrogen (Total)				61	2	
	Nitrogen (Organic)				60	2	
	Thermotolerant Coliforms				124	2	
	E. Coli				149	2	
Turbidity	75	2					
Aluminium	126	2					
Chromium	134	1					
Copper	79	2					
Iron	59	2					
Lead	131	4					
Nickel	100	4					
Aluminium (Filtered)	57	2					
Iron (Filtered)	34	2					
Lead (Filtered)	86	4					
Selenium (Filtered)	86	4					
Zinc (Filtered)	150	2					
Ammonia as N	111	5					
Nitrate (as N)	180	4					
Potassium	40	2					

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 2. RPD results are above the acceptance limit, with both results also above the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
 3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
 4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
 5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
- * Differences in nutrient concentrations between the primary and secondary laboratories could also be attributed to the different analytical techniques employed by the laboratories for these analyses.

Table 22
Surface Water RPD Explanation Summary - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
16	SWL16-1	QC331	Duplicate	MGT	Thermotolerant Coliforms	164	2
					E. Coli	98	2
					Turbidity	197	2
					Acidity (as CaCO ₃)	123	4
					Aluminium	193	2
					Arsenic	169	4
					Chromium	189	4
					Copper	193	4
					Iron	185	3
					Lead	189	4
					Manganese	163	1,5
					Nickel	156	4
					Selenium	120	4
					Zinc	192	4
					Aluminium (Filtered)	132	2
					Arsenic (Filtered)	120	4
					Copper (Filtered)	67	4
					Iron (Filtered)	149	3
		Manganese (Filtered)	159	4			
		Nickel (Filtered)	67	4			
		Zinc (Filtered)	189	4			
		Ammonia as N	111	1,5			
		Kjeldahl Nitrogen Total	50	2			
		Nitrite (as N)	100	4			
		Nitrogen (Total)	55	3			
		Nitrogen (Organic)	51	2			
		Phosphate total (P)	122	2			
		Reactive Phosphorus as P	120	2			
		Calcium	50	2			
		Magnesium	42	2			
		QC332	Triplicate	ALS	Thermotolerant Coliforms	96	2
					E. Coli	171	2
					Turbidity	196	2
					Acidity (as CaCO ₃)	138	4
Aluminium	174				2		
Arsenic	120				4		
Chromium	143				4		
Copper	173				4		
Iron	148				3		
Lead	165				4		
Manganese	83				1,5		
Nickel	89				4		
Selenium	50				4		
Zinc	176				4		
Iron (Filtered)	84				5		
Lead (Filtered)	86				4		
Manganese (Filtered)	94	4					
Selenium (Filtered)	86	4					
Kjeldahl Nitrogen Total	180	2					
Nitrite (as N)	143	4					
Nitrogen (Total)	181	3					
Phosphate total (P)	114	2					
Reactive Phosphorus as P	128	2					
17	SWL20-1	QC352	Duplicate	MGT	Thermotolerant Coliforms	67	2
					E. Coli	64	2
					Zinc	113	4
		QC353	Triplicate	ALS	Thermotolerant Coliforms	64	2
					Acidity (as CaCO ₃)	55	5
					Aluminium	59	4
					Chromium	50	4
					Lead	133	4
					Nickel	82	4
					Zinc	127	3
					Chromium (Filtered)	86	4
					Iron (Filtered)	130	3
					Lead (Filtered)	133	4
					Nickel (Filtered)	82	4
					Zinc (Filtered)	95	4
					Kjeldahl Nitrogen Total	67	2
					Nitrogen (Total)	67	5
Phosphate total (P)	91	3					
Potassium	37	5					

Explanation Codes:

1. Low analyte concentrations have exaggerated the percentage differences with respect to small total concentration differences. The calculated RPD values are not considered to affect the integrity of the results as both results remain below assessment criteria (where available).
2. RPD results are above the acceptance limit, with both results also above the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.

Table 23
Analytical Quality Control Results
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Sample ID	Date	Round	QC Type	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Mercury (filtered)	Nickel (filtered)	Selenium (filtered)	Zinc (filtered)	
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
				LOR	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001
QC1	14/12/2015	1	Field Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	-	< 0.0001	< 0.001	< 0.001	< 0.001	
QC2	14/12/2015	1	Transport Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	-	< 0.0001	< 0.001	< 0.001	< 0.001	
QC5	15/12/2015	1	Field Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	-	< 0.0001	< 0.001	< 0.001	< 0.001	
QC6	15/12/2015	1	Transport Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	-	< 0.0001	< 0.001	< 0.001	< 0.001	
QC7	16/12/2017	1	Field Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC8	16/12/2017	1	Transport Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC9	17/12/2015	1	Field Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC10	18/12/2015	1	Transport Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC11	18/12/2015	1	Field Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC14	21/12/2015	1	Transport Blank	< 0.05	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC15	21/12/2015	1	Field Blank	0.47	< 0.001	< 0.0002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.5	< 0.0001	< 0.001	< 0.001	< 0.001	
QC19	27/01/2016	2	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC20	27/01/2016	2	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC23	28/01/2016	2	Field Blank	1.6	< 0.001	< 0.00005	< 0.001	< 0.001	0.06	< 0.001	0.007	< 0.0001	< 0.001	< 0.001	0.004	
QC24	28/01/2016	2	Transport Blank	3	0.001	< 0.00005	< 0.001	< 0.001	9.5	< 0.001	< 0.005	< 0.0001	0.008	< 0.001	0.004	
QC25	29/01/2016	2	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC26	29/01/2016	2	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC30	1/02/2016	2	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC31	1/02/2016	2	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC32	2/02/2016	2	Field Blank	0.46	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	0.002	
QC33	2/02/2016	2	Transport Blank	0.38	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	0.002	
QC38	3/02/2016	2	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	
QC39	3/02/2016	2	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.001	

Notes:

ID = Identification
mg/L = milligrams per litre

L = litres
QC = Quality Control

Table 23
Analytical Quality Control Results
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Sample ID	Date	Round	QC Type	Aluminium (filtered)	Arsenic (filtered)	Cadmium (filtered)	Chromium (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)	Magnesium (filtered)	Mercury (filtered)	Nickel (filtered)	Selenium (filtered)	Zinc (filtered)
QC350	10/04/2017	17	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC351	10/04/2017	17	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC356	11/04/2017	17	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC357	11/04/2017	17	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC358	12/04/2017	17	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC359	12/04/2017	17	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC362	13/04/2017	17	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC369	18/04/2017	17	Field Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005
QC370	18/04/2017	17	Transport Blank	< 0.05	< 0.001	< 0.00005	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.0001	< 0.001	< 0.001	< 0.005

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Table 24
Quality Control Log
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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 1 - 14th to 21st of December 2015					
QC1	Field Blank/ Rinsate Blank	14/12/2015	MGT		
QC2	Transport Blank	14/12/2015	MGT		
QC3	Duplicate of GW05	15/12/2015	MGT	Intralaboratory	
QC4	Triplicate of GW05	15/12/2015	ALS	Interlaboratory	
QC5	Field Blank/ Rinsate Blank	15/12/2015	MGT		
QC6	Transport Blank	15/12/2015	MGT		
QC7	Field Blank/ Rinsate Blank	16/12/2015	MGT		
QC8	Transport Blank	16/12/2015	MGT		
QC9	Field Blank/ Rinsate Blank	17/12/2015	MGT		
QC10	Transport Blank	18/12/2015	MGT		
QC11	Field Blank/ Rinsate Blank	18/12/2015	MGT		
QC12	Duplicate of GW5	18/12/2015	MGT	Intralaboratory	
QC13	Triplicate of GW5	18/12/2015	ALS	Interlaboratory	
QC14	Transport Blank	21/12/2015	MGT		
QC15	Field Blank/ Rinsate Blank	21/12/2015	MGT		
QC16	Duplicate of SSM-3	21/12/2015	MGT	Intralaboratory	
QC17	Triplicate of SSM-3	21/12/2015	ALS	Interlaboratory	
Event 2 - 27th January to 3rd of February 2016					
QC18	Duplicate of MW1	27/01/2016	MGT	Intralaboratory	
QC19	Field Blank/ Rinsate Blank	27/01/2016	MGT		
QC20	Transport Blank	27/01/2016	MGT		
QC21	Duplicate of SW1-1	28/01/2016	MGT	Intralaboratory	
QC22	Triplicate of SW1-1	28/01/2016	ALS	Interlaboratory	
QC23	Field Blank/ Rinsate Blank	28/01/2016	MGT		
QC24	Transport Blank	28/01/2016	MGT		
QC25	Field Blank/ Rinsate Blank	29/01/2016	MGT		
QC26	Transport Blank	29/01/2016	MGT		
QC27	Duplicate of MW18	1/02/2016	ALS	Interlaboratory	
QC28	Duplicate of MW45	3/02/2016	MGT	Intralaboratory	
QC29	Duplicate of MW47	3/02/2016	ALS	Interlaboratory	
QC30	Field Blank/ Rinsate Blank	1/02/2016	MGT		
QC31	Transport Blank	1/02/2016	MGT		
QC32	Field Blank/ Rinsate Blank	2/02/2016	MGT		
QC33	Transport Blank	2/02/2016	MGT		
QC34	-	-	-	-	QC number not used
QC35	Duplicate of MW46	3/02/2016	MGT	Intralaboratory	
QC36	Duplicate of SW6-1	3/02/2016	MGT	Intralaboratory	
QC37	Triplicate of SW6-1	3/02/2016	ALS	Interlaboratory	
QC38	Field Blank/ Rinsate Blank	3/02/2016	MGT		
QC39	Transport Blank	3/02/2016	MGT		

Notes:

ID = Identification
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MGT = MGT Eurofins

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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 3 - 16th to 24th of February 2016					
QC40	Duplicate of MW1	16/02/2016	MGT	Intralaboratory	
QC41	Duplicate of SW2-1	16/02/2016	MGT	Intralaboratory	
QC42	Triplicate of SW2-1	16/02/2016	ALS	Interlaboratory	
QC43	Field Blank/ Rinsate Blank	16/02/2016	MGT		
QC44	Transport Blank	16/02/2016	MGT		
QC45	Field Blank/ Rinsate Blank	17/02/2016	MGT		
QC46	Duplicate of MW45	18/02/2016	ALS	Interlaboratory	
QC47	Duplicate of MW47	18/02/2016	ALS	Interlaboratory	
QC48	Duplicate of MW46	18/02/2016	ALS	Interlaboratory	
QC49	Field Blank/ Rinsate Blank	18/02/2016	MGT		
QC50	Transport Blank	18/02/2016	MGT		
QC51	Duplicate of MW18	19/02/2016	MGT	Intralaboratory	
QC52	Field Blank/ Rinsate Blank	19/02/2016	MGT		
QC53	Transport Blank	19/02/2016	MGT		
QC54	Field Blank/ Rinsate Blank	22/02/2016	MGT		
QC55	Transport Blank	22/02/2016	MGT		
QC56	Field Blank/ Rinsate Blank	23/02/2016	MGT		
QC57	Transport Blank	23/02/2016	MGT		
QC58	Field Blank/ Rinsate Blank	24/02/2016	MGT		
QC59	Transport Blank	24/02/2016	MGT		
Event 4 - 14th to 23rd of March 2016					
QC60	Field Blank/ Rinsate Blank	15/03/2016	MGT		
QC61	Transport Blank	15/03/2016	MGT		
QC62	Duplicate of MW1	15/03/2016	ALS	Interlaboratory	
QC63	Duplicate of SWL2-1	15/03/2016	MGT	Intralaboratory	
QC64	Triplicate of SWL2-1	15/03/2016	ALS	Interlaboratory	
QC65	Field Blank/ Rinsate Blank	16/03/2016	MGT		
QC66	Transport Blank	16/03/2016	MGT		
QC67	Duplicate of SWL19-2	16/03/2016	MGT	Intralaboratory	
QC68	Triplicate of SWL19-2	16/03/2016	ALS	Interlaboratory	
QC69	Field Blank/ Rinsate Blank	17/03/2016	MGT		
QC70	Transport Blank	17/03/2016	MGT		
QC71	Duplicate of MW18	17/03/2016	MGT	Intralaboratory	
QC72	Field Blank/ Rinsate Blank	18/03/2016	MGT		
QC73	Transport Blank	18/03/2016	MGT		
QC74	Field Blank/ Rinsate Blank	21/03/2016	MGT		
QC75	Transport Blank	21/03/2016	MGT		
QC76	Duplicate of MW46	21/03/2016	MGT	Intralaboratory	
QC77	Field Blank/ Rinsate Blank	22/03/2016	MGT		
QC78	Transport Blank	22/03/2016	MGT		
QC79	Duplicate of MW45	22/03/2016	ALS	Interlaboratory	
QC80	Duplicate of MW47	22/03/2016	ALS	Interlaboratory	

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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 5 - 11th of April to 15th of April 2016					
QC81	Field Blank/ Rinsate Blank	11/04/2016	MGT		
QC82	Transport Blank	11/04/2016	MGT		
QC83	Duplicate of MW1	11/04/2016	MGT	Intralaboratory	
QC84	Field Blank/ Rinsate Blank	12/04/2016	MGT		
QC85	Transport Blank	12/04/2016	MGT		
QC86	Duplicate of MW50	12/04/2016	MGT	Intralaboratory	
QC87	Field Blank/ Rinsate Blank	13/04/2016	MGT		
QC88	Transport Blank	13/04/2016	MGT		
QC89	Duplicate of MW46	13/04/2016	ALS	Interlaboratory	
QC90	Duplicate of MW47	13/04/2016	ALS	Interlaboratory	
QC91	Duplicate of MW45	13/04/2016	ALS	Interlaboratory	
QC92	Field Blank/ Rinsate Blank	14/04/2016	MGT		
QC93	Transport Blank	14/04/2016	MGT		
QC94	Duplicate of MW18	14/04/2016	MGT	Intralaboratory	
QC95	Field Blank/ Rinsate Blank	15/04/2016	MGT		
QC96	Transport Blank	15/04/2016	MGT		
Event 6 - 2nd of May to the 9th of May 2016					
QC97	Field Blank/ Rinsate Blank	2/05/2016	MGT		
QC98	Transport Blank	2/05/2016	MGT		
QC99	Field Blank/ Rinsate Blank	3/05/2016	MGT		
QC100	Transport Blank	3/05/2016	MGT		
QC101	Field Blank/ Rinsate Blank	4/05/2016	MGT		
QC102	Transport Blank	4/05/2016	MGT		
QC103	Duplicate of MW50	4/05/2016	MGT	Intralaboratory	
QC104	Transport Blank	5/05/2016	MGT		
QC105	Field Blank/ Rinsate Blank	5/05/2016	MGT		
QC106	Duplicate of SWL16	5/05/2016	MGT	Intralaboratory	
QC107	Triplicate of SWL16	5/05/2016	ALS	Interlaboratory	
QC108	Duplicate of MW46	5/05/2016	ALS	Interlaboratory	
QC109	Duplicate of MW47	5/05/2016	ALS	Interlaboratory	
QC110	Duplicate of MW45	5/05/2016	ALS	Interlaboratory	
QC111	Duplicate of SWL17-2	5/05/2016	MGT	Intralaboratory	
QC112	Triplicate of SWL17-2	5/05/2016	ALS	Interlaboratory	
QC113	Transport Blank	6/05/2016	MGT		
QC114	Field Blank/ Rinsate Blank	6/05/2016	MGT		
QC115	Duplicate of MW18	6/05/2016	MGT	Intralaboratory	
QC116	Transport Blank	9/05/2016	MGT		
QC117	Field Blank/ Rinsate Blank	9/05/2016	MGT		
QC118	Duplicate of MW1	9/05/2016	MGT	Intralaboratory	

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Table 24
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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 7 - 21st of June to 28th of June 2016					
QC119	Transport Blank	21/06/2016	MGT		
QC120	Field Blank/ Rinsate Blank	21/06/2016	MGT		
QC121	Duplicate of MW50	21/06/2016	MGT	Intralaboratory	
QC122	Transport Blank	22/06/2016	MGT		
QC123	Field Blank/ Rinsate Blank	22/06/2016	MGT		
QC124	Duplicate of MW45	22/06/2016	ALS	Interlaboratory	
QC125	Duplicate of MW47	22/06/2016	ALS	Interlaboratory	
QC126	Duplicate of MW46	22/06/2016	ALS	Interlaboratory	
QC127	Duplicate of SWL19-1	22/06/2016	MGT	Intralaboratory	
QC128	Triplicate of SWL19-1	22/06/2016	ALS	Interlaboratory	
QC129	Transport Blank	23/06/2016	MGT		
QC130	Field Blank/ Rinsate Blank	23/06/2016	MGT		
QC131	Transport Blank	24/06/2016	MGT		
QC132	Field Blank/ Rinsate Blank	24/06/2016	MGT		
QC133	Duplicate of MW18	24/06/2016	MGT	Intralaboratory	
QC134	Transport Blank	27/06/2016	MGT		
QC135	Field Blank/ Rinsate Blank	27/06/2016	MGT		
QC136	Transport Blank	28/06/2016	MGT		
QC137	Field Blank/ Rinsate Blank	28/06/2016	MGT		
QC138	Duplicate of MW1	28/06/2016	MGT	Intralaboratory	
Event 8 - 12th of July to 19th of July 2016					
QC139	Transport Blank	12/07/2016	MGT		
QC140	Field Blank/ Rinsate Blank	12/07/2016	MGT		
QC141	Duplicate of MW50	12/07/2016	MGT	Intralaboratory	
QC142	Transport Blank	13/07/2016	MGT		
QC143	Field Blank/ Rinsate Blank	13/07/2016	MGT		
QC144	Duplicate of MW46	13/07/2016	ALS	Interlaboratory	
QC145	Duplicate of MW47	13/07/2016	ALS	Interlaboratory	
QC146	Duplicate of MW45	13/07/2016	ALS	Interlaboratory	
QC147	Duplicate of SWL17-??	13/07/2016	MGT	Intralaboratory	
QC148	Triplicate of SWL17-??	13/07/2016	ALS	Interlaboratory	
QC149	Transport Blank	14/07/2016	MGT		
QC150	Field Blank/ Rinsate Blank	14/07/2016	MGT		
QC151	Transport Blank	15/07/2016	MGT		
QC152	Field Blank/ Rinsate Blank	15/07/2016	MGT		
QC153	Duplicate of MW18	15/07/2016	MGT	Intralaboratory	
QC154	Transport Blank	18/07/2016	MGT		
QC155	Field Blank/ Rinsate Blank	18/07/2016	MGT		
QC156	Transport Blank	19/07/2016	MGT		
QC157	Duplicate of MW1	19/07/2016	MGT		
QC158	Field Blank/ Rinsate Blank	19/07/2016	MGT		

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Table 24
Quality Control Log
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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 9 - 15th of August to 25th of August 2016					
QC159	Duplicate of MW50	15/08/2016	MGT	Intralaboratory	
QC160	Transport Blank	15/08/2016	MGT		
QC161	Field Blank/ Rinsate Blank	15/08/2016	MGT		
QC162	Transport Blank	17/08/2016	MGT		
QC163	Field Blank/ Rinsate Blank	17/08/2016	MGT		
QC164	Duplicate of MW46	18/08/2016	ALS	Interlaboratory	
QC165	Duplicate of MW47	18/08/2016	ALS	Interlaboratory	
QC166	Duplicate of MW45	18/08/2016	ALS	Interlaboratory	
QC167	Transport Blank	18/08/2016	MGT		
QC168	Field Blank/ Rinsate Blank	18/08/2016	MGT		
QC169	Transport Blank	19/08/2016	MGT		
QC170	Field Blank/ Rinsate Blank	19/08/2016	MGT		
QC171	Duplicate of MW18	22/08/2016	MGT	Intralaboratory	
QC172	Field Blank/ Rinsate Blank	22/08/2016	MGT		
QC173	Transport Blank	22/08/2016	MGT		
QC174	Field Blank/ Rinsate Blank	23/08/2016	MGT		
QC175	Transport Blank	23/08/2016	MGT		
QC176	Field Blank/ Rinsate Blank	24/08/2016	MGT		
QC177	Transport Blank	24/08/2016	MGT		
QC178	Field Blank/ Rinsate Blank	25/08/2016	MGT		
QC179	Transport Blank	25/08/2016	MGT		
QC180	Duplicate of MW1	25/08/2016	MGT	Intralaboratory	
QC181	Duplicate of SWL2-1	25/08/2016	MGT		
QC182	Triplicate of SWL2-1	25/08/2016	ALS	Interlaboratory	
Event 10 - 20th of September to 4th of October 2016					
QC183	Field Blank/ Rinsate Blank	20/09/2016	MGT		
QC184	Transport Blank	20/09/2016	MGT		
QC185	Field Blank/ Rinsate Blank	21/09/2016	MGT		
QC186	Transport Blank	21/09/2016	MGT		
QC187	Field Blank/ Rinsate Blank	22/09/2016	MGT		
QC188	Transport Blank	22/09/2016	MGT		
QC189	Field Blank/ Rinsate Blank	23/09/2016	MGT		
QC190	Transport Blank	23/09/2016	MGT		
QC191	Field Blank/ Rinsate Blank	27/09/2016	MGT		
QC192	Transport Blank	27/09/2016	MGT		
QC193	Field Blank/ Rinsate Blank	28/09/2016	MGT		
QC194	Transport Blank	28/09/2016	MGT		
QC195	Duplicate of MW50	28/09/2016	MGT	Intralaboratory	
QC196	Field Blank/ Rinsate Blank	29/09/2016	MGT		
QC197	Transport Blank	29/09/2016	MGT		
QC198	Duplicate of MW1	29/09/2016	MGT	Intralaboratory	
QC199	Duplicate of MW18	29/09/2016	MGT	Intralaboratory	
QC200	Field Blank/ Rinsate Blank	3/10/2016	MGT		
QC201	Transport Blank	3/10/2016	MGT		
QC202	Duplicate of MW45	3/10/2016	ALS	Interlaboratory	
QC203	Duplicate of SWL18-?	3/10/2016	MGT	Intralaboratory	
QC204	Triplicate of SWL18-?	3/10/2016	ALS	Interlaboratory	
QC205	Duplicate of MW46	3/10/2016	ALS	Interlaboratory	
QC206	Duplicate of MW47	3/10/2016	ALS	Interlaboratory	
QC207	Duplicate of SWL4-3	3/10/2016	MGT	Intralaboratory	
QC208	Triplicate of SWL4-3	3/10/2016	ALS	Interlaboratory	
QC209	Duplicate of SWL1_3	4/10/2016	MGT	Intralaboratory	
QC210	Triplicate of SWL1_3	4/10/2016	ALS	Interlaboratory	
QC211	Field Blank/ Rinsate Blank	4/10/2016	MGT		
QC212	Transport Blank	4/10/2016	MGT		

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Table 24
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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 11 - 24th of October to 1st of November 2016					
QC213	Duplicate of MW50	24/10/2016	ALS	Interlaboratory	
QC214	Duplicate of SWL19_1	24/10/2016	MGT	Intralaboratory	
QC215	Triplicate of SWL19_1	24/10/2016	ALS	Interlaboratory	
QC216	Field Blank/ Rinsate Blank	24/10/2016	MGT		
QC217	Transport Blank	24/10/2016	MGT		
QC218	Duplicate of MW46	25/10/2016	MGT	Intralaboratory	
QC219	Duplicate of MW47	25/10/2016	MGT	Intralaboratory	
QC220	Duplicate of MW45	25/10/2016	MGT	Intralaboratory	
QC221	Field Blank/ Rinsate Blank	25/10/2016	MGT		Lab did not receive
QC222	Transport Blank	25/10/2016	MGT		
QC223	Duplicate of SWL16_2	26/10/2016	MGT	Intralaboratory	
QC224	Triplicate of SWL16-2	26/10/2016	ALS	Interlaboratory	
QC225	Field Blank/ Rinsate Blank	26/10/2016	MGT		
QC226	Transport Blank	26/10/2016	MGT		
QC227	Duplicate of MW1	27/10/2016	MGT		
QC228	Field Blank/ Rinsate Blank	27/10/2016	MGT		
QC229	Transport Blank	27/10/2016	MGT		
QC230	Field Blank/ Rinsate Blank	28/10/2016	MGT		
QC231	Transport Blank	28/10/2016	MGT		
QC232	Duplicate of MW18	31/10/2016	ALS	Interlaboratory	
QC233	Transport Blank	31/10/2016	MGT		
QC234	Field Blank/ Rinsate Blank	31/10/2016	MGT		
QC235	-	-	-	-	QC number not used
QC236	Transport Blank	1/11/2016	MGT		
QC237	Field Blank/ Rinsate Blank	1/11/2016	MGT		
Event 12 - 22nd of November to 28th of November 2016					
QC238	Duplicate of SWL2-1	22/11/2016	MGT	Intralaboratory	
QC239	Triplicate of SWL2-1	22/11/2016	ALS	Interlaboratory	
QC240	Duplicate of SWL1-1	22/11/2016	MGT	Intralaboratory	
QC241	Triplicate of SWL1-1	22/11/2016	ALS	Interlaboratory	
QC242	Duplicate of MW1	22/11/2016	MGT	Intralaboratory	
QC243	Field Blank/ Rinsate Blank	22/11/2016	MGT		
QC244	Transport Blank	22/11/2016	MGT		
QC245	Duplicate of MW46	23/11/2016	ALS	Interlaboratory	
QC246	Duplicate of MW47	23/11/2016	ALS	Interlaboratory	
QC247	Duplicate of MW45	23/11/2016	ALS	Interlaboratory	
QC248	Duplicate of MW50	23/11/2016	MGT	Intralaboratory	
QC249	Field Blank/ Rinsate Blank	23/11/2016	MGT		
QC250	Transport Blank	23/11/2016	MGT		
QC251	Field Blank/ Rinsate Blank	24/11/2016	MGT		
QC252	Transport Blank	24/11/2016	MGT		
QC253	Field Blank/ Rinsate Blank	25/11/2016	MGT		
QC254	Transport Blank	25/11/2016	MGT		
QC255	Field Blank/ Rinsate Blank	28/11/2016	MGT		
QC256	Transport Blank	28/11/2016	MGT		
QC257	Duplicate of MW18	28/11/2016	MGT	Intralaboratory	
QC259	Field Blank/ Rinsate Blank	29/11/2016	MGT		
QC260	Transport Blank	29/11/2016	MGT	Intralaboratory	

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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 13 - 13th of December to 19th of December 2016					
QC258	Field Blank/ Rinsate Blank	13/12/2016	MGT		
QC259a	Transport Blank	13/12/2016	MGT		double qc number
QC260a	Duplicate of MW1	13/12/2016	MGT	Intralaboratory	double qc number
QC261	Duplicate of SWL19-1	14/12/2016	MGT		
QC262	Triplicate of SWL19-1	14/12/2016	ALS	Interlaboratory	
QC263	Duplicate of MW46	14/12/2016	ALS	Interlaboratory	
QC264	Duplicate of MW47	14/12/2016	ALS	Interlaboratory	
QC265	Duplicate of MW45	14/12/2016	ALS	Interlaboratory	
QC266	Field Blank/ Rinsate Blank	14/12/2016	MGT		
QC267	Transport Blank	14/12/2016	MGT		
QC268	Duplicate of MW50	14/12/2016	MGT	Intralaboratory	
QC269	Field Blank/ Rinsate Blank	15/12/2016	MGT		
QC270	Transport Blank	15/12/2016	MGT		
QC271	Field Blank/ Rinsate Blank	16/12/2016	MGT		
QC272	Transport Blank	16/12/2016	MGT		
QC273	Duplicate of MW18	19/12/2016	MGT	Intralaboratory	
QC274	Field Blank/ Rinsate Blank	19/12/2016	MGT		
QC275	Transport Blank	19/12/2016	MGT		
Event 14 - 17th of January to 24th of January 2017					
QC276	Field Blank/ Rinsate Blank	17/01/2017	MGT		
QC277	Transport Blank	17/01/2017	MGT		
QC278	Duplicate of MW1	17/01/2017	MGT	Intralaboratory	
QC279	Field Blank/ Rinsate Blank	18/01/2017	MGT		
QC280	Transport Blank	18/01/2017	MGT		
QC281	Duplicate of SWL19-1	18/01/2017	MGT	Intralaboratory	
QC282	Triplicate of SWL19-1	18/01/2017	ALS	Interlaboratory	
QC283	Duplicate of MW46	18/01/2017	ALS	Interlaboratory	
QC284	Duplicate of SWL18-1	18/01/2017	MGT	Intralaboratory	
QC285	Duplicate of MW50	18/01/2017	ALS	Interlaboratory	
QC286	Triplicate of SWL18-1	18/01/2017	MGT	Intralaboratory	
QC287	Duplicate of MW47	18/01/2017	ALS	Interlaboratory	
QC288	Duplicate of MW45	19/01/2017	MGT	Intralaboratory	
QC289	Duplicate of SWL20-2	18/01/2017	MGT	Intralaboratory	
QC290	Triplicate of SWL20-2	18/01/2017	ALS	Interlaboratory	
QC291	Field Blank/ Rinsate Blank	19/01/2017	MGT		
QC292	Transport Blank	19/01/2017	MGT		
QC293	Field Blank/ Rinsate Blank	20/01/2017	MGT		
QC294	Transport Blank	20/01/2017	MGT		
QC295	Field Blank/ Rinsate Blank	23/01/2017	MGT		
QC296	Transport Blank	23/01/2017	MGT		
QC297	Duplicate of MW18	23/01/2017	MGT	Intralaboratory	
QC298	Field Blank/ Rinsate Blank	24/01/2017	MGT		
QC299	Transport Blank	24/01/2017	MGT		

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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 15 - 15th of February to 21st of February 2017					
QC300	Duplicate of MW1	15/02/2017	ALS	Interlaboratory	
QC301	Duplicate of SWL1-1	15/02/2017	MGT	Intralaboratory	
QC302	Triplicate of SWL1-1	15/02/2017	ALS	Interlaboratory	
QC303	Duplicate of SWL4-1	15/02/2017	MGT	Intralaboratory	
QC304	Triplicate of SWL4-1	15/02/2017	ALS	Interlaboratory	
QC305	Field Blank/ Rinsate Blank	15/02/2017	MGT		
QC306	Transport Blank	15/02/2017	MGT		
QC307	Duplicate of SWL16_3	16/02/2017	MGT	Intralaboratory	
QC308	Triplicate of SWL16_3	16/02/2017	ALS	Interlaboratory	
QC309	Duplicate of MW46	16/02/2017	ALS	Interlaboratory	
QC310	Duplicate of MW47	16/02/2017	ALS	Interlaboratory	
QC311	Duplicate of MW45	16/02/2017	ALS	Interlaboratory	
QC312	Field Blank/ Rinsate Blank	16/02/2017	MGT		
QC313	Transport Blank	16/02/2017	MGT		
QC314	Field Blank/ Rinsate Blank	17/02/2017	MGT		
QC315	Transport Blank	17/02/2017	MGT		
QC316	Field Blank/ Rinsate Blank	20/02/2017	MGT		
QC317	Transport Blank	20/02/2017	MGT		
QC318	Duplicate of MW50	20/02/2017	ALS	Interlaboratory	
QC319	Duplicate of SWL21_3	20/02/2017	MGT	Intralaboratory	
QC320	Triplicate of SWL21_3	20/02/2017	ALS	Interlaboratory	
QC321	Duplicate of MW18	21/02/2017	MGT	Intralaboratory	
QC322	Field Blank/ Rinsate Blank	21/02/2017	MGT		
QC323	Transport Blank	21/02/2017	MGT		
Event 16 - 13th of March to 20th of March 2017					
QC324	Field Blank/ Rinsate Blank	13/03/2017	MGT		
QC325	Transport Blank	13/03/2017	MGT		
QC326	Duplicate of MW50	14/03/2017	MGT		
QC327	Duplicate of SW21_1	14/03/2017	MGT		
QC328	Triplicate of SW21_1	14/03/2017	ALS	Interlaboratory	
QC329	Field Blank/ Rinsate Blank	14/03/2017	MGT		
QC330	Transport Blank	14/03/2017	MGT		
QC331	Dup of SW16_1	15/03/2017	MGT		
QC332	Trip of SW16_1	15/03/2017	ALS	Interlaboratory	
QC333	Duplicate of MW46	15/03/2017	MGT	Intralaboratory	
QC334	Duplicate of MW47	15/03/2017	MGT	Intralaboratory	
QC335	Duplicate of MW45	15/03/2017	MGT	Intralaboratory	
QC336	Field Blank/ Rinsate Blank	15/03/2017	MGT		
QC337	Transport Blank	15/03/2017	MGT		
QC338	Duplicate of MW18	16/03/2017	MGT	Intralaboratory	
QC339	Field Blank/ Rinsate Blank	16/03/2017	MGT		
QC340	Transport Blank	16/03/2017	MGT		
QC341	Duplicate of MW1	17/03/2017	MGT	Intralaboratory	
QC342	Field Blank/ Rinsate Blank	17/03/2017	MGT		
QC343	Transport Blank	17/03/2017	MGT		
QC344	Field Blank/ Rinsate Blank	20/03/2017	MGT		
QC345	Transport Blank	20/03/2017	MGT		

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Sample ID	Description	Date	Laboratory	Duplicate Type	Notes
Event 17 - 10th of May to 18th of May 2017					
QC346	Duplicate of MW46	10/04/2017	ALS	Interlaboratory	
QC347	Duplicate of MW47	10/04/2017	ALS	Interlaboratory	
QC348	Duplicate of MW45	10/04/2017	ALS	Interlaboratory	
QC349	Duplicate of MW50	10/04/2017	ALS	Interlaboratory	
QC350	Field Blank/ Rinsate Blank	10/04/2017	MGT		
QC351	Transport Blank	10/04/2017	MGT		
QC352	Duplicate of SWL20-1	10/04/2017	MGT	Intralaboratory	
QC353	Triplicate of SWL20-1	10/04/2017	ALS	Interlaboratory	
QC354	-	-	-	-	Missed QC number
QC355	Duplicate of MW1	11/04/2017	MGT	Intralaboratory	
QC356	Field Blank/ Rinsate Blank	11/04/2017	MGT		
QC357	Transport Blank	11/04/2017	MGT		
QC358	Field Blank/ Rinsate Blank	12/04/2017	MGT		
QC359	Transport Blank	12/04/2017	MGT		
QC360	Duplicate of MW18	13/04/2017	MGT		
QC361	Field Blank/ Rinsate Blank	13/04/2017	MGT		Not requested for analysis
QC362	Transport Blank	13/04/2017	MGT		Reported as 262
QC369	Field Blank/ Rinsate Blank	18/04/2017	MGT		
QC370	Transport Blank	18/04/2017	MGT		

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Table 25
Groundwater Field Results - Others
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
4766	17/12/2015	1	50	30	3.612	3.920	-	-	5.49	-91	0.3	0.11	-	22.8	195	Roots removed
4816	18/12/2015	1	75	15	2.431	13.080	-	-	5.29	-85	0.2	0.03	-	21.8	130	
5259	17/12/2015	1	50	45	4.445	13.940	-	-	4.72	173	0.3	0.10	-	21.6	195	
5399	15/12/2015	1	100	30	4.826	10.890	-	-	5.55	-104	0.3	0.11	-	21.9	195	
5514	15/12/2015	1	75	15	1.900	10.330	-	-	5.08	-91	0.2	0.18	-	23.6	130	
12282922	16/12/2015	1	55	20	2.432	5.940	-	-	5.62	-131	0.6	0.49	-	20.6	390	
n-bhc18c	14/12/2015	1	60	10	1.845	4.840	-	-	4.61	158	10.5	0.30	-	23.0	6825	
gw01	16/12/2015	1	50	15	5.095	10.800	-	-	4.74	15	0.3	0.26	-	28.5	195	
gw1	18/12/2015	1	65	120	3.589	5.580	-	-	6.38	-74	0.5	0.38	-	24.7	325	
Gw02	17/12/2015	1	60	210	4.310	20.190	-	-	7.23	49	0.6	3.88	-	22.6	390	
Gw05	15/12/2015	1	50	30	2.824	7.470	-	-	6.07	-54	0.2	0.17	-	21.6	130	
Gw07	14/12/2015	1	50	90	1.551	6.000	-	-	5.19	-142	0.4	0.05	-	24.3	260	
gw09	14/12/2015	1	50	15	0.935	5.960	-	-	4.97	-45	3.6	0.15	-	23.9	2340	
N-bh05	18/12/2015	1	50	75	2.848	12.820	-	-	6.47	-132	0.3	0.06	-	22.7	195	
N-bh06	17/12/2015	1	75	15	2.010	12.820	-	-	5.02	-96	0.3	0.04	-	22.5	195	
N-bh08	17/12/2015	1	50	30	7.458	15.390	-	-	6.15	-93	0.2	0.13	-	22.6	130	
N-bh09	17/12/2015	1	40	60	2.746	11.750	-	-	6.10	-123	0.3	0.18	-	22.6	195	
n-bh11	16/12/2015	1	50	30	7.700	16.700	-	-	5.70	-119	0.2	0.13	-	22.7	130	
N-bh21	16/12/2015	1	50	15	5.870	10.370	-	-	4.32	-12	0.3	0.19	-	23.1	195	
N-bh24	15/12/2015	1	50	15	2.226	5.650	-	-	5.18	-116	0.2	0.08	-	21.8	130	
N-bh26	14/12/2015	1	50	20	1.427	5.670	-	-	5.24	-92	0.2	0.04	-	20.8	130	
MW33	1/02/2016	2	75	60	2.297	4.485	-	-	5.94	-109	0.3	0.06	0.7	20.7	195	
MW34	1/02/2016	2	75	90	2.115	4.315	-	-	5.57	-68	0.3	0.43	5.1	23.4	195	
MW35	1/02/2016	2	125	54	2.490	4.260	-	-	4.72	-65	0.3	0.28	3.4	24.0	195	
MW43	3/02/2016	2	40	60	-	-	-	-	5.68	-187	3.8	0.08	0.8	20.6	2470	
MW44	3/02/2016	2	150	210	1.894	6.220	-	-	6.97	-165	1.4	0.04	0.5	22.8	910	
MW45	3/02/2016	2	50	210	2.355	4.580	-	-	7.27	-263	1.6	0.02	0.2	20.6	1040	
MW47	3/02/2016	2	50	210	1.958	7.000	-	-	7.62	-119	2.0	0.18	2.1	22.8	1300	
MW48	2/02/2016	2	0	0	2.140	7.850	-	-	4.29	156	3.1	0.39	4.8	25.2	2015	
MW49	2/02/2016	2	175	15	1.545	7.440	-	-	4.74	44	5.2	0.39	4.8	25.1	3380	
MW52	2/02/2016	2	100	15	1.983	4.001	-	-	6.43	53	35.8	0.30	4.0	22.7	23270	
MW53	2/02/2016	2	50	180	1.889	4.270	-	-	4.83	18	6.5	0.09	1.0	22.2	4225	
MW54	2/02/2016	2	110	15	1.905	4.750	-	-	6.63	26	1.1	0.15	1.7	21.0	715	
MW33	22/02/2016	3	75	75	2.290	4.310	Hydrocarbon	Slightly Cloudy	5.90	-116	0.4	0.46	5.2	21.3	247	
MW34	22/02/2016	3	45	150	2.380	4.140	Organic Matter	Cloudy	5.35	-66	0.4	0.84	10.0	23.6	254	
MW35	22/02/2016	3	45	110	2.700	4.300	Organic Matter	Slightly Cloudy	4.63	-94	0.3	0.06	0.7	23.8	182	
MW43	18/02/2016	3	0	425	6.020	2.030	Sulphur	Cloudy	4.06	523	22.9	0.60	7.4	21.5	14879	lots of sediment in bottom 1/3 sleeve
MW44	18/02/2016	3	255	85	2.870	4.500	Sulphur	Cloudy	6.68	43	1.0	0.00	0.0	27.3	631	sediment at bottom third
MW45	18/02/2016	3	330	50	1.900	7.300	None	Cloudy	7.23	-338	1.8	0.02	0.2	20.2	1157	
MW47	18/02/2016	3	330	25	2.000	7.900	None	Very Cloudy	7.53	-250	2.2	0.02	0.2	22.1	1443	
MW48	18/02/2016	3	15	175	1.623	7.380	None	Clear	4.80	159	3.2	8.26	77.8	12.1	2067	15cm sediment, broken insitu
MW49	18/02/2016	3	-	-	-	-	-	-	4.98	138	5.8	9.49	82.7	8.4	3757	
MW52	24/02/2016	3	420	50	1.997	4.270	None	Slightly Cloudy	6.56	-22	34.3	0.94	12.6	23.6	22276	
MW53	24/02/2016	3	60	100	2.081	4.750	None	Slightly Cloudy	5.00	-61	6.8	0.06	0.7	22.1	4446	
MW54	24/02/2016	3	180	25	3.185	4.999	None	Turbid	6.59	-43	1.2	0.07	0.8	21.0	761	
MW32	18/03/2016	4	60	75	2.466	4.475	Sulfur	Slightly Cloudy	5.28	-102	0.3	0.10	1.1	22.5	208	
MW33	18/03/2016	4	84	65	1.930	4.370	Organic Matter	Cloudy	5.90	-151	0.3	0.19	2.2	21.2	208	
MW34	18/03/2016	4	42	100	2.495	4.200	Other	Cloudy	5.18	-43	0.3	0.86	10.1	22.9	202	
MW35	18/03/2016	4	30	150	2.783	4.310	Organic Matter	Cloudy	4.63	-91	0.2	0.58	6.9	23.7	150	
MW43	16/03/2016	4	180	275	2.178	6.230	Organic Matter	Cloudy	5.70	-206	3.8	0.53	6.1	21.2	2451	sediment at bottom third
MW44	16/03/2016	4	75	270	3.180	4.560	Organic Matter	Very Cloudy	6.81	-215	1.4	0.36	4.2	22.9	897	sediment
MW47	22/03/2016	4	25	570	2.325	7.850	Sulfur	Cloudy	7.46	-185	2.2	0.01	0.1	22.6	1411	
MW48	16/03/2016	4	30	300	1.720	7.420	None	Cloudy	4.48	67	2.9	0.78	9.7	25.6	1885	sediment
MW49	16/03/2016	4	45	300	1.713	5.850	None	Slightly Cloudy	5.58	-1	5.2	0.56	6.9	25.2	3400	2/3 sediment . top clear
MW45	22/03/2016	4	25	570	2.150	7.300	Sulfur	Slightly Cloudy	7.28	-246	1.7	0.02	0.3	20.9	1092	
MW52	16/03/2016	4	10	420	2.141	4.270	None	Slightly Cloudy	6.37	54	38.0	0.09	1.3	23.0	24687	
MW53	16/03/2016	4	60	100	2.199	4.745	None	Cloudy	4.82	-38	6.5	0.12	1.4	22.6	4212	
MW54	16/03/2016	4	60	210	3.366	4.985	None	Cloudy	6.47	6	1.2	0.08	0.9	21.3	761	
MW33	14/04/2016	5	63	55	2.170	4.365	Sulfur	Cloudy	6.10	-114	0.3	0.32	3.6	20.9	188	
MW34	14/04/2016	5	39	95	2.325	4.200	None	Cloudy	5.48	-45	0.3	1.53	17.6	22.5	189	stained hydrasleeve
MW35	14/04/2016	5	15	155	2.650	4.315	Sulfur	Cloudy	4.86	-37	0.2	0.67	7.8	23.4	151	
MW43	15/04/2016	5	165	275	1.645	4.100	Sulfur	Clear	5.95	-156	3.4	0.11	1.2	21.4	2200	
MW44	15/04/2016	5	75	345	3.240	4.560	Organic Matter	Cloudy	7.29	-37	1.9	0.27	3.2	22.9	1231	
MW47	13/04/2016	5	30	210	1.805	7.825	None	Cloudy	7.43	-290	1.9	0.03	0.4	22.4	1229	
MW48	15/04/2016	5	18	250	1.210	7.380	None	Cloudy	4.57	183	2.6	0.64	7.6	23.6	1693	
MW49	15/04/2016	5	60	250	1.100	5.720	None	Cloudy	5.21	89	4.3	0.23	2.7	23.2	2805	
MW45	13/04/2016	5	25	240	1.405	7.290	Sulfur	Cloudy	7.33	-313	1.6	0.02	0.3	21.4	1060	
MW52	12/04/2016	5	25	60	1.351	4.260	None	Slightly Cloudy	6.23	48	29.1	0.30	3.8	23.2	18941	
MW53	12/04/2016	5	30	100	1.492	4.750	None	Slightly Cloudy	4.79	134	7.0	0.53	6.3	22.6	4570	
MW54	12/04/2016	5	25	90	2.545	4.985	None	Very Cloudy	6.42	-17	1.1	0.04	0.5	21.6	689	

Notes:

ID = identification
mbTOC - metres below top of casing
m = metres
DO = Dissolved oxygen
TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
mg/L = milligrams per litre
°C = degrees Celsius

L = litres
mS/cm = millisiemens per centimetre
mV = millivolts

Table 25
Groundwater Field Results - Others
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW33	3/05/2016	6	75	90	2.031	4.295	None	Slightly Cloudy	6.24	-90	0.4	0.06	0.6	20.9	267	
MW34	3/05/2016	6	50	30	2.074	4.125	None	Slightly Cloudy	5.26	3	0.4	0.48	5.5	22.2	273	
MW35	9/05/2016	6	175	30	2.510	4.300	Organic Matter	Cloudy	4.13	-53	0.3	0.46	5.3	22.5	215	
MW43	4/05/2016	6	350	300	1.555	6.240	Sulfur	Cloudy	5.70	-178	4.2	0.28	3.1	19.9	2724	
MW44	4/05/2016	6	50	450	2.650	4.560	Organic Matter	Cloudy	6.73	-36	2.2	0.88	9.9	21.0	1450	
MW45	5/05/2016	6	25	225	1.306	7.240	None	Cloudy	6.71	-3	1.2	0.31	3.5	20.2	761	
MW47	5/05/2016	6	25	240	1.771	7.810	None	Slightly Cloudy	7.58	-171	2.5	0.10	1.1	21.1	1638	
MW48	4/05/2016	6	250	30	1.130	7.340	None	Cloudy	4.07	197	3.2	1.21	13.9	21.5	2067	
MW49	4/05/2016	6	290	30	1.032	5.230	None	Cloudy	4.19	154	5.1	0.68	7.7	20.6	3296	
MW52	4/05/2016	6	75	180	1.130	4.460	None	Slightly Cloudy	6.12	84	31.9	2.20	28.2	21.8	20703	
MW53	4/05/2016	6	75	30	1.317	4.744	None	Slightly Cloudy	4.37	237	11.2	0.55	6.4	21.1	7293	ants in well
MW54	4/05/2016	6	50	75	2.437	4.990	None	Cloudy	6.60	-5	1.5	0.11	1.2	21.4	956	
MW33	23/06/2016	7	50	75	1.506	4.355	None	Cloudy	5.84	-137	0.4	0.07	0.8	18.8	247	
MW34	23/06/2016	7	75	30	1.623	4.200	None	Cloudy	4.92	-10	0.4	0.56	6.1	19.1	241	
MW35	24/06/2016	7	200	120	2.000	4.300	Organic Matter	Slightly Cloudy	4.49	9	0.3	0.16	1.7	19.8	189	
MW43	22/06/2016	7	215	-	1.000	6.260	Sulfur	Cloudy	5.83	-129	3.7	0.34	3.5	15.9	2412	Too turbid for alkalinity field test
MW44	22/06/2016	7	125	900	1.475	4.550	Organic Matter	Cloudy	7.04	-239	1.7	0.24	2.5	16.5	1086	
MW45	22/06/2016	7	50	270	0.521	7.180	None	Slightly Cloudy	7.03	-303	1.8	0.11	1.1	16.6	1190	
MW47	22/06/2016	7	25	180	0.805	7.780	None	Turbid	7.36	-254	2.6	0.12	1.3	17.0	1690	
MW48	22/06/2016	7	225	75	0.650	7.350	None	Slightly Cloudy	4.95	156	3.8	0.88	9.1	16.7	2483	
MW49	22/06/2016	7	160	75	0.600	5.920	None	Clear	4.29	212	4.4	0.95	9.9	16.6	2880	
MW52	21/06/2016	7	50	30	0.590	4.335	None	Slightly Cloudy	5.44	100	18.1	3.49	38.8	17.2	11759	
MW53	21/06/2016	7	50	45	0.825	4.810	None	Slightly Cloudy	5.27	116	13.1	0.40	4.3	16.9	8515	
MW54	21/06/2016	7	50	105	1.739	5.040	None	Turbid	7.17	13	1.5	0.65	7.0	18.7	962	
MW33	14/07/2016	8	50	75	1.274	4.343	None	Cloudy	6.07	-112	0.4	0.04	0.4	17.7	228	
MW34	14/07/2016	8	100	30	1.390	-	None	Cloudy	4.96	19	0.5	1.21	12.5	16.8	293	
MW35	14/07/2016	8	-	-	-	-	-	-	4.56	-74	0.4	0.36	3.8	17.4	273	Tablet flat battery unable to record data
MW43	13/07/2016	8	100	0	0.690	6.225	Sulfur	Clear	6.04	-182	4.5	0.68	6.5	13.1	2916	
MW44	13/07/2016	8	50	0	1.880	4.550	Organic Matter	Cloudy	7.12	-265	1.9	0.15	1.5	14.6	1221	
MW45	13/07/2016	8	25	195	0.350	7.160	None	Slightly Cloudy	7.51	-288	1.8	0.18	1.8	15.2	1177	
MW47	13/07/2016	8	10	240	0.775	7.745	None	Slightly Cloudy	7.56	-257	2.3	0.05	0.5	15.8	1469	
MW48	12/07/2016	8	150	30	0.475	7.240	None	Turbid	4.84	127	3.3	0.46	4.7	16.5	2171	
MW49	12/07/2016	8	75	15	-	5.900	None	Turbid	4.41	141	5.4	1.24	12.1	14.2	3506	
MW52	12/07/2016	8	75	60	0.541	4.330	None	Slightly Cloudy	5.95	50	8.4	2.53	25.0	14.1	5460	
MW53	12/07/2016	8	100	30	0.705	4.815	None	Slightly Cloudy	5.34	-36	7.8	0.28	2.8	14.9	5070	
MW54	12/07/2016	8	50	120	1.247	5.040	None	Slightly Cloudy	6.57	56	1.4	0.53	5.5	17.5	891	
MW33	18/08/2016	9	125	120	0.990	4.360	Unknown	Slightly Cloudy	5.45	-39	0.6	0.34	3.4	15.3	411	
MW34	18/08/2016	9	110	75	1.090	4.160	Unknown	Slightly Cloudy	4.85	92	0.2	0.88	9.0	16.2	130	
MW35	18/08/2016	9	120	60	1.298	4.270	Unknown	Slightly Cloudy	4.05	47	0.3	0.31	3.2	16.5	204	
MW43	17/08/2016	9	0	300	0.492	6.220	Sulfur	Slightly Cloudy	5.80	-150	3.9	0.44	4.5	15.2	2547	
MW44	17/08/2016	9	450	270	0.960	4.540	Unknown	Slightly Cloudy	6.85	-220	1.5	0.07	0.8	15.1	948	
MW45	18/08/2016	9	15	240	0.250	7.150	Organic Matter	Clear	7.34	-277	1.8	0.18	1.8	15.5	1144	
MW47	18/08/2016	9	25	240	0.740	7.710	Other	Cloudy	7.31	-207	2.0	0.45	4.4	14.2	1318	
MW48	17/08/2016	9	160	15	0.457	7.090	Unknown	Cloudy	4.32	197	3.0	0.40	4.2	16.2	1964	
MW49	17/08/2016	9	200	30	0.575	5.840	Other	Slightly Cloudy	4.76	160	4.6	1.32	14.0	16.7	3020	
MW52	15/08/2016	9	200	240	0.779	4.300	Unknown	Slightly Cloudy	5.99	129	13.7	3.10	33.5	16.5	8878	
MW53	15/08/2016	9	125	30	0.875	4.815	Unknown	Slightly Cloudy	5.08	101	6.8	0.48	5.0	16.1	4423	
MW54	15/08/2016	9	50	150	1.454	5.030	Other	Cloudy	6.14	119	2.0	1.10	11.6	17.1	1318	
MW33	27/09/2016	10	50	75	1.085	4.335	Other	Clear	6.25	-114	0.4	0.10	1.0	15.9	260	
MW34	20/09/2016	10	100	30	0.981	4.165	Other	Slightly Cloudy	5.08	90	0.2	0.14	1.4	15.7	130	
MW35	27/09/2016	10	150	30	1.274	4.255	Other	Clear	4.55	-9	0.3	0.18	1.9	16.8	195	
MW43	27/09/2016	10	150	0	0.700	6.230	Organic Matter	Cloudy	5.85	-202	3.9	0.56	5.7	15.3	2552	
MW44	21/09/2016	10	25	180	1.193	4.540	Sulfur	Very Cloudy	6.68	-233	1.5	0.04	0.4	15.8	962	
MW45	3/10/2016	10	25	210	0.502	7.135	Other	Clear	7.16	-304	1.8	0.01	0.2	16.4	1164	
MW47	3/10/2016	10	25	210	0.803	7.700	Other	Cloudy	7.62	-192	2.1	1.04	10.5	15.9	1391	
MW48	20/09/2016	10	100	15	0.575	7.081	Other	Very Cloudy	4.96	88	3.2	0.94	9.7	16.6	2048	
MW49	28/09/2016	10	125	30	0.590	5.800	Other	Slightly Cloudy	4.40	131	4.7	0.80	8.1	15.4	3023	
MW52	20/09/2016	10	50	210	0.803	4.310	Other	Cloudy	5.68	94	11.7	0.88	9.2	16.0	7605	
MW53	28/09/2016	10	45	100	0.837	4.785	Other	Cloudy	5.50	29	7.2	0.27	2.8	15.5	4693	
MW54	28/09/2016	10	50	150	1.364	5.030	Other	Slightly Cloudy	6.88	4	2.3	0.53	5.4	16.5	1469	
MW33	26/10/2016	11	50	180	1.330	4.330	Other	Slightly Cloudy	6.09	-97	0.4	0.08	0.8	17.4	228	
MW34	26/10/2016	11	100	90	1.215	4.180	Other	Slightly Cloudy	5.16	27	0.3	0.75	8.2	19.7	175	
MW35	26/10/2016	11	100	30	1.449	4.260	Other	Slightly Cloudy	4.05	65	0.2	0.46	5.1	20.6	141	
MW43	26/10/2016	11	150	180	0.968	6.170	Organic Matter	Slightly Cloudy	5.78	-132	4.0	0.57	5.9	16.6	2598	
MW44	26/10/2016	11	100	0	1.496	4.530	Organic Matter	Cloudy	6.85	-107	1.4	0.42	4.5	18.8	893	
MW45	25/10/2016	11	50	270	0.800	7.100	Other	Slightly Cloudy	7.56	-276	1.8	0.11	1.2	17.5	1166	
MW47	25/10/2016	11	50	330	1.400	7.620	Other	Slightly Cloudy	7.50	-224	2.0	0.94	9.8	17.0	1301	
MW48	24/10/2016	11	125	75	1.027	7.040	Other	Cloudy	4.31	158	3.0	0.55	6.1	18.9	1965	
MW49	24/10/2016	11	75	60	1.117	5.790	Other	Clear	4.39	109	4.6	0.40	4.6	21.0	2988	
MW52	24/10/2016	11	100	195	0.890	4.300	Other	Clear	6.09	68	12.4	1.14	13.0	19.2	8080	
MW53	24/10/2016	11	125	60	1.230	4.800	Other	Clear	4.85	148	6.9	0.11	1.1	17.8	4467	
MW54	24/10/2016	11	100	65	1.670	5.025	Other	Cloudy	6.35	112	1.6	0.71	7.7	18.4	1048	

Notes:
ID = Identification
mbTOC = metres below top of casing
m = metres
DO = Dissolved oxygen
TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
mg/L = milligrams per litre
°C = degrees Celsius

L = litres
mS/cm = milliSiemens per centimetre
mV = millivolts

Table 25
Groundwater Field Results - Others
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	Depth to Water m from TOC	Well Total Depth m from TOC	Odour	Clarity	pH	Redox mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	TDS mg/L	Comments
MW33	24/11/2016	12	75	105	1.553	4.345	Other	Clear	5.88	-129	0.3	0.06	0.6	18.5	214	
MW34	25/11/2016	12	200	30	1.500	4.200	Other	Slightly Cloudy	5.26	-16	0.2	0.30	3.3	19.6	141	
MW35	24/11/2016	12	150	60	1.690	4.240	Other	Clear	4.14	24	0.2	0.23	2.6	21.7	117	
MW43	29/11/2016	12	200	270	1.266	6.245	Sulfur	Cloudy	5.66	-169	3.9	0.13	1.4	17.3	2509	
MW44	29/11/2016	12	50	240	1.852	4.535	Other	Turbid	6.66	-180	1.3	0.07	0.8	19.4	868	
MW45	29/11/2016	12	70	330	1.102	7.100	Other	Turbid	7.57	-270	1.6	0.23	2.5	19.4	1039	
MW47	23/11/2016	12	100	360	1.665	7.610	Other	Very Cloudy	7.68	-267	1.7	0.06	0.6	18.1	1109	
MW48	28/11/2016	12	80	330	1.310	7.040	Other	Very Cloudy	4.26	250	2.8	0.63	7.2	21.3	1791	
MW49	28/11/2016	12	200	60	1.435	5.820	Other	Cloudy	4.43	243	4.8	0.12	1.4	20.8	3122	
MW52	23/11/2016	12	125	240	1.331	4.295	Other	Cloudy	6.02	47	25.3	0.27	3.3	20.5	16465	
MW53	23/11/2016	12	125	60	1.518	4.790	Other	Clear	5.09	-13	6.5	0.36	3.9	19.2	4226	
MW54	23/11/2016	12	25	240	2.065	5.030	Other	Cloudy	6.51	-15	1.4	0.27	2.9	19.6	935	
MW33	15/12/2016	13	50	135	1.684	4.350	Organic Matter	Clear	6.05	-108	0.35	0.05	0.5	19.3	227	
MW34	15/12/2016	13	175	60	1.636	4.165	Other	Clear	5.2	-52	0.31	0.22	2.6	22.0	202	
MW35	15/12/2016	13	350	30	1.840	4.260	Other	Slightly Cloudy	4.51	1	0.18	0.28	3.2	21.8	115	
MW43	19/12/2016	13	150	0	1.465	6.180	Organic Matter	Turbid	5.76	-189	4.10	0.10	1.0	18.3	2666	
MW44	19/12/2016	13	50	135	2.250	4.540	Other	Cloudy	6.77	-208	1.42	0.02	0.3	20.3	922	
MW45	14/12/2016	13	25	270	1.380	7.050	Organic Matter	Cloudy	7.43	-267	1.79	0.03	0.3	18.9	1166	
MW47	14/12/2016	13	25	0	1.820	7.560	Other	Cloudy	7.48	-222	1.94	0.72	8.1	20.4	1260	
MW48	14/12/2016	13	300	0	1.410	7.070	Other	Slightly Cloudy	4.32	164	3.02	0.23	2.6	22.5	1965	
MW49	14/12/2016	13	300	90	1.090	5.800	Other	Clear	4.47	171	5.36	0.09	1.1	22.2	3485	
MW52	14/12/2016	13	100	330	1.466	4.325	Other	Clear	6.22	45	29.82	0.40	5.0	21.5	19382	
MW53	14/12/2016	13	100	60	1.627	4.770	Other	Slightly Cloudy	5.09	10	6.90	1.37	15.6	20.6	4487	
MW54	14/12/2016	13	25	210	2.323	5.030	Other	Cloudy	6.6	-58	1.47	0.31	3.4	19.7	958	
MW33	23/01/2017	14	75	30	1.970	4.335	Other	Slightly Cloudy	5.89	-112	0.30	0.03	0.4	19.9	192	
MW34	19/01/2017	14	150	90	1.885	4.150	Other	Clear	5.47	-58	0.33	0.21	2.5	22.7	214	
MW35	23/01/2017	14	45	30	2.155	4.255	Other	Cloudy	4.63	9	0.16	0.17	2.0	23.6	107	
MW43	19/01/2017	14	125	210	1.780	6.180	Other	Cloudy	5.96	-181	3.39	-0.01	-0.2	19.2	2202	
MW44	19/01/2017	14	50	300	2.565	4.550	Other	Cloudy	7.05	-216	1.26	-0.05	-0.6	22.0	816	
MW45	19/01/2017	14	55	200	1.750	7.045	Other	Cloudy	7.39	-262	1.51	0.16	1.8	20.1	983	
MW47	18/01/2017	14	50	210	2.050	7.470	Other	Cloudy	7.72	-200	1.70	0.19	2.2	22.1	1104	
MW48	18/01/2017	14	180	60	1.560	7.070	Other	Clear	4.4	199	2.76	0.19	2.3	24.8	1791	
MW49	18/01/2017	14	200	60	1.630	5.790	Other	Slightly Cloudy	4.58	176	4.94	0.08	0.9	24.4	3208	
MW52	18/01/2017	14	50	270	1.765	4.325	Other	Slightly Cloudy	6.1	75	30.15	0.87	11.5	23.7	19594	
MW53	18/01/2017	14	100	45	1.891	4.805	Other	Cloudy	5.08	8	7.08	0.18	2.1	22.2	4604	
MW54	18/01/2017	14	25	150	2.717	5.040	Other	Cloudy	6.38	29	1.43	0.42	4.8	21.1	927	
MW33	17/02/2017	15	25	90	1.580	4.330	Unknown	Clear	6.07	-118	0.37	0.01	0.2	20.5	241	
MW34	16/02/2017	15	125	90	1.480	4.150	Other	Very Cloudy	5.34	-28	0.32	0.46	5.4	23.6	210	
MW35	17/02/2017	15	150	120	1.790	4.180	Sulfur	Slightly Cloudy	4.27	40	0.22	1.53	18.5	24.8	143	
MW43	17/02/2017	15	125	210	1.010	6.180	Sulfur	Cloudy	5.75	-159	4.14	1.08	12.6	22.5	2689	
MW44	17/02/2017	15	50	300	1.380	4.490	Sulfur	Cloudy	7.05	-2	0.86	0.50	5.9	23.9	559	
MW45	16/02/2017	15	60	190	0.705	7.050	Other	Cloudy	7.16	-187	1.82	0.79	8.9	21.0	1183	
MW47	16/02/2017	15	45	250	1.045	7.560	Other	Cloudy	7.31	90	2.04	0.23	2.6	21.3	1326	
MW48	21/02/2017	15	250	30	1.100	7.070	Other	Cloudy	4.32	172	3.00	0.80	9.7	24.5	1950	
MW49	21/02/2017	15	210	30	1.210	5.800	Other	Cloudy	4.53	196	5.30	0.14	1.7	24.3	3445	
MW52	20/02/2017	15	100	450	1.010	4.300	Unknown	Clear	6.22	43	17.09	5.41	71.4	26.2	11109	
MW53	20/02/2017	15	125	180	1.150	4.750	Decaying	Clear	6.48	-145	5.35	0.23	2.9	25.4	3476	Dead ants in well
MW54	20/02/2017	15	100	210	1.820	5.000	Unknown	Clear	6.62	-106	1.50	0.08	0.9	21.8	972	
MW33	15/03/2017	16	300	100	1.740	4.330	Unknown	Cloudy	5.95	-141	0.33	0.03	0.3	20.9	214	
MW34	15/03/2017	16	90	50	1.675	4.150	Other	Very Cloudy	5.9	-96	0.28	0.07	0.8	23.2	185	
MW35	15/03/2017	16	120	150	1.970	4.180	Sulfur	Clear	4.28	34	0.18	0.32	3.9	25.5	115	
MW43	14/03/2017	16	-	-	1.355	6.180	Sulfur	Cloudy	5.92	-160	3.48	0.24	2.7	20.7	2265	Too turbid for titrations
MW44	14/03/2017	16	300	50	2.070	4.490	Sulfur	Cloudy	7	-157	1.15	0.12	1.4	22.8	751	
MW45	15/03/2017	16	400	60	0.420	7.050	Other	Cloudy	7.53	-246	1.54	0.10	1.2	21.1	1003	
MW47	15/03/2017	16	390	45	1.690	7.560	Other	Cloudy	7.48	-207	1.69	0.17	1.9	22.1	1097	
MW48	14/03/2017	16	30	250	0.870	7.070	Other	Cloudy	4.47	208	2.61	0.32	3.9	24.5	1694	
MW49	14/03/2017	16	45	150	1.345	5.800	Other	Cloudy	4.73	178	4.70	0.12	1.4	23.6	3055	
MW52	14/03/2017	16	300	100	0.890	4.300	Unknown	Clear	4.82	192	12.57	4.19	53.2	25.0	8168	
MW53	14/03/2017	16	180	125	1.020	4.750	Other	Clear	5.37	-125	6.29	0.10	1.2	22.9	4086	Dead ants in well
MW54	14/03/2017	16	300	100	1.700	5.000	Unknown	Slightly Cloudy	6.52	-131	1.37	1.58	18.3	22.1	888	
MW33	13/04/2017	17	55	50	1.860	4.330	Organic Matter	Cloudy	6.02	-82	0.38	0.06	0.7	21.0	250	
MW34	13/04/2017	17	60	100	1.855	4.150	Other	Cloudy	5.56	-56	0.32	0.06	0.7	22.5	210	
MW35	13/04/2017	17	50	80	2.100	4.180	Other	Cloudy	4.39	33	0.18	0.10	1.2	23.6	118	
MW43	10/04/2017	17	420	150	1.547	6.180	Sulfur	Slightly Cloudy	5.96	-149	4.16	0.06	0.6	20.0	2706	
MW44	18/04/2017	17	1200	50	2.003	4.490	Other	Slightly Cloudy	6.63	-126	1.44	0.03	0.3	20.8	938	
MW45	10/04/2017	17	220	55	-	7.050	Other	Cloudy	7.46	-197	1.77	0.14	1.6	21.2	1149	
MW47	10/04/2017	17	200	80	1.900	7.560	Other	Cloudy	7.37	-189	1.92	0.56	6.3	20.5	1250	
MW48	10/04/2017	17	15	250	1.408	7.070	Other	Cloudy	4.23	245	3.07	0.44	5.1	23.3	1992	
MW49	10/04/2017	17	15	100	1.490	5.800	Other	Clear	4.54	209	5.39	0.10	1.2	22.7	3506	
MW52	10/04/2017	17	420	50	1.410	4.300	Other	Clear	6.12	114	27.70	0.63	7.9	22.2	18003	
MW53	10/04/2017	17	150	125	1.641	4.750	Other	Slightly Cloudy	5.07	-31	7.15	0.04	0.4	21.6	4649	
MW54	10/04/2017	17	510	50	2.363	5.000	Other	Slightly Cloudy	6.45	-74	1.62	0.18	2.1	21.0	1052	

Notes:
 ID = Identification
 mbTOC = metres below top of casing
 m = metres
 DO = Dissolved oxygen
 ** TDS (mg/l) = EC (mS/cm) x 650. Conversion derived from chemical analysis results (Davidson 1995).

ID = identification
 mg/L = milligrams per litre
 °C = degrees Celsius

L = litres
 mS/cm = millisiemens per centimetre
 mV = millivolts

Table 26
Groundwater Analytical Results - Others
Total and Dissolved Metals
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001
1. ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	NE
12282922	17/12/2015	1		0.46	<0.001	<0.0002	0.002	<0.001	0.30	<0.001	-	<0.0001	<0.001	0.003	0.33	<0.001	<0.0002	<0.001	<0.001	0.18	<0.001	-	<0.0001	<0.001	<0.001	0.002	
4766	17/12/2015	1		0.61	0.001	<0.0002	0.002	<0.001	2.50	0.001	-	<0.0001	0.002	<0.001	0.023	0.31	<0.001	<0.0002	0.001	<0.001	2.40	<0.001	-	<0.0001	<0.001	<0.001	0.013
4816	18/12/2015	1		0.77	<0.001	<0.0002	0.003	<0.001	0.10	<0.001	-	<0.0001	0.001	<0.001	0.009	0.62	<0.001	<0.0002	<0.001	<0.001	0.10	<0.001	-	<0.0001	<0.001	<0.001	0.004
5259	17/12/2015	1		1.90	<0.001	<0.0002	0.002	<0.001	7.80	<0.001	-	<0.0001	<0.001	0.003	1.00	<0.001	<0.0002	<0.001	<0.001	2.10	<0.001	-	<0.0001	<0.001	<0.001	0.003	
5399	15/12/2015	1		0.96	<0.001	<0.0002	0.005	0.003	7.00	<0.001	-	<0.0001	0.003	<0.001	0.002	0.75	<0.001	<0.0002	<0.001	<0.001	7.00	<0.001	-	<0.0001	<0.001	<0.001	0.002
5514	15/12/2015	1		1.60	<0.001	<0.0002	0.003	<0.001	2.50	<0.001	-	<0.0001	0.002	<0.001	0.002	1.20	<0.001	<0.0002	<0.001	<0.001	1.50	<0.001	-	<0.0001	<0.001	<0.001	0.002
GW01	17/12/2015	1		1.10	<0.001	<0.0002	0.003	<0.001	3.40	0.001	-	<0.0001	0.002	<0.001	0.003	0.76	<0.001	<0.0002	<0.001	<0.001	2.70	<0.001	-	<0.0001	<0.001	<0.001	0.003
GW02	17/12/2015	1		0.20	0.001	<0.0002	0.003	0.002	0.32	0.002	-	<0.0001	0.002	<0.001	0.026	<0.05	<0.001	<0.0002	<0.001	0.002	<0.05	<0.001	-	<0.0001	0.001	<0.001	0.015
GW05	15/12/2015	1		0.24	<0.001	<0.0002	0.002	0.01	1.30	<0.001	-	<0.0001	<0.001	<0.001	0.005	0.13	<0.001	<0.0002	<0.001	<0.001	0.77	<0.001	-	<0.0001	<0.001	<0.001	0.002
GW07	14/12/2015	1		5.10	0.002	<0.0002	0.007	<0.001	1.20	0.005	-	<0.0001	0.002	0.016	0.002	1.30	<0.001	<0.0002	<0.001	<0.001	0.75	<0.001	-	<0.0001	<0.001	0.016	0.002
GW09	14/12/2015	1		0.25	<0.001	<0.0002	0.002	<0.001	5.60	0.002	-	<0.0001	0.004	<0.001	0.007	0.08	<0.001	<0.0002	<0.001	<0.001	3.80	0.001	-	<0.0001	0.003	<0.001	0.007
GW1	18/12/2015	1		0.10	<0.001	<0.0002	0.002	<0.001	<0.05	<0.001	-	<0.0001	0.001	<0.001	0.002	0.06	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	-	<0.0001	<0.001	<0.001	0.002
GW5	18/12/2015	1		0.24	<0.001	<0.0002	0.003	<0.001	0.16	<0.001	-	<0.0001	0.001	<0.001	0.002	0.24	<0.001	<0.0002	<0.001	<0.001	0.07	<0.001	-	<0.0001	<0.001	<0.001	0.002
NLBH05	18/12/2015	1		<0.05	<0.001	<0.0002	0.002	<0.001	<0.05	<0.001	-	<0.0001	<0.001	<0.001	0.001	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	-	<0.0001	<0.001	<0.001	0.001
NLBH06	17/12/2015	1		0.38	<0.001	<0.0002	0.002	<0.001	0.90	<0.001	-	<0.0001	<0.001	<0.001	0.004	0.37	<0.001	<0.0002	<0.001	<0.001	0.86	<0.001	-	<0.0001	<0.001	<0.001	0.004
NLBH08	17/12/2015	1		2.50	0.002	<0.0002	0.006	<0.001	1.40	0.001	-	<0.0001	0.002	<0.001	0.009	0.12	<0.001	<0.0002	0.001	<0.001	1.30	<0.001	-	<0.0001	<0.001	<0.001	0.005
NLBH09	17/12/2015	1		0.20	<0.001	<0.0002	0.003	<0.001	0.60	<0.001	-	<0.0001	<0.001	<0.001	0.008	0.13	<0.001	<0.0002	<0.001	<0.001	0.50	<0.001	-	<0.0001	<0.001	<0.001	0.002
NLBH11	17/12/2015	1		0.34	<0.001	<0.0002	0.003	<0.001	1.30	0.001	-	<0.0001	0.001	<0.001	0.005	<0.05	<0.001	<0.0002	<0.001	<0.001	1.20	<0.001	-	<0.0001	<0.001	<0.001	0.003
NL-BH18C	14/12/2015	1		0.46	<0.001	<0.0002	0.03	0.003	3.40	<0.001	-	<0.0001	0.025	<0.001	0.019	0.12	<0.001	<0.0002	0.03	0.003	2.90	<0.001	-	<0.0001	0.025	<0.001	0.017
NLBH21	17/12/2015	1		2.90	<0.001	<0.0002	0.003	<0.001	16.00	<0.001	-	<0.0001	0.004	<0.001	0.004	2.60	<0.001	<0.0002	<0.001	<0.001	15.00	<0.001	-	<0.0001	0.003	<0.001	0.004
NL-BH24	15/12/2015	1		0.60	<0.001	<0.0002	0.003	<0.001	0.23	<0.001	-	<0.0001	0.001	<0.001	0.005	0.60	<0.001	<0.0002	<0.001	<0.001	0.21	<0.001	-	<0.0001	<0.001	<0.001	0.002
NL-BH26	14/12/2015	1		0.29	<0.001	<0.0002	0.002	<0.001	0.23	0.001	-	<0.0001	<0.001	0.006	0.008	0.27	<0.001	<0.0002	<0.001	<0.001	0.23	0.001	-	<0.0001	<0.001	0.006	0.008

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 MW = Monitoring well

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Table 26
 Groundwater Analytical Results - Others
 Total and Dissolved Metals
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.0005	0.001	0.001	0.001	
1. ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
MW33	3/05/2016	6		2.5	0.002	<0.00005	0.005	0.002	2.8	0.005	0.01	<0.0001	0.003	<0.001	0.009	0.23	0.001	<0.00005	<0.001	<0.001	1.1	<0.001	0.009	<0.0001	<0.001	<0.001	0.001
MW34	3/05/2016	6		2.8	0.004	<0.00005	0.004	0.002	3.7	0.003	<0.005	<0.0001	<0.001	<0.001	0.009	0.68	0.002	<0.00005	<0.001	<0.001	2.1	<0.001	<0.005	<0.0001	<0.001	<0.001	0.001
MW35	5/05/2016	6		0.59	<0.001	<0.00005	0.002	0.002	0.24	<0.001	<0.005	0.0005	<0.001	<0.001	0.006	0.29	<0.001	<0.00005	<0.001	<0.001	0.14	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW43	4/05/2016	6		18	0.016	0.00013	0.034	0.003	6	0.034	0.008	0.0003	0.011	0.019	0.007	1.3	0.004	<0.00005	0.007	<0.001	0.11	0.002	0.008	<0.0001	0.003	0.003	0.003
MW44	4/05/2016	6		6.9	0.029	<0.00005	0.018	0.011	8.4	0.016	0.006	<0.0001	0.01	0.041	0.017	<0.05	0.022	<0.00005	0.005	0.007	0.3	0.001	<0.005	<0.0001	0.007	0.035	0.008
MW45	5/05/2016	6		4	0.01	0.00005	0.009	0.003	17	0.008	0.008	<0.0001	0.011	0.044	0.007	<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	0.006	<0.0001	0.001	0.001	<0.001
MW47	5/05/2016	6		4.3	0.006	0.00005	0.011	0.002	5.3	0.009	0.087	<0.0001	0.01	0.003	0.015	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.07	<0.0001	0.003	<0.001	0.001
MW48	4/05/2016	6		27	0.015	0.0028	0.029	0.013	29	0.21	0.027	<0.0001	0.081	0.004	0.019	0.14	<0.001	0.0014	<0.001	<0.001	0.14	0.011	0.023	<0.0001	0.017	<0.001	0.009
MW49	4/05/2016	6		4.2	0.002	0.00009	0.015	0.017	7	0.041	0.019	0.0005	0.007	0.001	0.038	<0.05	<0.001	0.00006	<0.001	0.006	0.08	0.017	0.018	<0.0001	0.006	<0.001	0.034
MW52	4/05/2016	6		4.6	0.008	0.00073	0.008	0.007	2.8	0.01	0.068	0.0001	0.013	0.02	0.074	0.11	0.004	0.00065	<0.001	0.007	0.12	<0.001	0.068	<0.0001	0.012	0.011	0.074
MW53	4/05/2016	6		4.4	0.017	0.00059	0.003	0.003	16	0.028	0.059	<0.0001	0.031	0.001	0.23	0.43	<0.001	0.00055	<0.001	0.002	0.59	0.004	0.049	<0.0001	0.028	<0.001	0.18
MW54	4/05/2016	6		2.6	0.01	<0.00005	0.007	0.002	47	0.014	0.059	<0.0001	0.004	0.001	0.011	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.045	<0.0001	<0.001	<0.001	0.001
MW33	23/06/2016	7		2.7	0.002	0.00005	0.006	0.002	3.7	0.007	0.011	<0.0001	0.005	<0.001	0.01	0.27	<0.001	<0.00005	<0.001	<0.001	0.2	<0.001	0.01	<0.0001	<0.001	<0.001	0.002
MW34	23/06/2016	7		5.7	0.005	0.00005	0.006	0.006	3.8	0.007	<0.005	<0.0001	0.002	<0.001	<0.005	1.7	0.004	<0.00005	<0.001	0.003	1.4	0.003	<0.005	<0.0001	0.001	<0.001	0.003
MW35	23/06/2016	7		0.55	<0.001	0.00011	0.002	0.003	0.23	<0.001	<0.005	0.0001	<0.001	<0.001	0.012	0.33	<0.001	<0.0001	<0.001	<0.001	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW43	22/06/2016	7		5	0.008	0.00005	0.016	0.001	1.6	0.008	0.008	0.0001	0.005	0.007	0.007	0.99	0.002	<0.00005	0.005	<0.001	0.08	<0.001	0.007	<0.0001	0.001	0.002	0.002
MW44	22/06/2016	7		3.3	0.02	<0.00005	0.012	0.005	3.1	0.009	0.01	<0.0001	0.006	0.009	0.042	0.07	0.011	<0.00005	0.002	<0.001	0.41	<0.001	0.006	<0.0001	0.003	0.003	0.008
MW45	22/06/2016	7		3.2	0.012	0.00009	0.007	0.003	18	0.008	0.007	<0.0001	0.013	0.005	0.007	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.005	<0.0001	<0.001	0.002	<0.001
MW47	22/06/2016	7		3.7	0.004	0.00006	0.009	0.002	3.4	0.006	0.029	<0.0001	0.006	0.003	0.014	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.026	<0.0001	<0.001	0.001	<0.001
MW48	22/06/2016	7		8.7	0.007	0.00043	0.012	0.005	17	0.052	0.029	<0.0001	0.021	0.003	1.9	0.11	<0.001	0.00015	<0.001	<0.001	<0.05	0.004	0.029	<0.0001	0.009	<0.001	1.9
MW49	22/06/2016	7		1.3	<0.001	0.00006	0.008	0.004	2.3	0.011	0.012	0.0005	0.005	<0.001	0.013	0.1	<0.001	0.00005	<0.001	0.001	<0.05	0.005	0.011	<0.0001	0.005	<0.001	0.012
MW52	21/06/2016	7		3.6	0.004	0.0018	-	0.023	2.4	0.004	0.26	<0.0001	0.017	0.004	1.6	1	0.002	0.0017	<0.001	0.018	0.49	<0.001	0.24	<0.0001	0.014	0.003	1.5
MW53	21/06/2016	7		2.8	0.011	0.00092	-	0.002	8.6	0.011	0.15	<0.0001	0.037	0.001	8.9	0.09	0.002	0.00045	<0.001	<0.001	3.5	<0.001	0.13	<0.0001	0.03	<0.001	7.4
MW54	21/06/2016	7		5	0.018	<0.00005	-	0.004	110	0.025	0.084	<0.0001	0.005	0.002	0.017	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.049	<0.0001	<0.001	<0.001	<0.001
MW33	14/07/2016	8		0.89	<0.001	<0.00005	0.002	<0.001	1.2	0.001	0.009	<0.0001	0.001	<0.001	0.009	0.28	<0.001	<0.00005	<0.001	<0.001	0.14	0.001	0.008	<0.0001	0.001	<0.001	0.003
MW34	14/07/2016	8		14	0.003	<0.00005	0.013	0.007	4.5	0.008	<0.005	0.0002	0.005	0.002	0.006	2	0.002	<0.00005	0.001	0.004	1.6	0.003	<0.005	<0.0001	<0.001	<0.001	0.003
MW35	14/07/2016	8		0.59	<0.001	<0.00005	0.001	0.002	0.24	<0.001	<0.005	0.0002	<0.001	<0.001	0.005	0.34	<0.001	<0.00005	<0.001	<0.001	0.2	<0.001	<0.005	<0.0001	<0.001	<0.001	0.003
MW43	13/07/2016	8		3.9	0.007	<0.00005	0.013	<0.001	1.6	0.007	0.007	<0.0001	0.004	0.006	0.009	0.8	0.002	<0.00005	0.005	<0.001	0.11	<0.001	0.007	<0.0001	0.001	0.002	0.002
MW44	13/07/2016	8		2.8	0.008	<0.00005	0.01	0.002	2.9	0.006	0.011	<0.0001	0.003	0.005	0.024	0.05	0.005	<0.00005	0.004	<0.001	0.45	<0.001	0.009	<0.0001	0.001	0.003	<0.001
MW45	13/07/2016	8		1.9	0.007	<0.00005	0.004	0.001	12	0.005	<0.005	<0.0001	0.007	0.002	0.011	<0.05	0.004	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	0.001	<0.001
MW47	13/07/2016	8		3.5	0.005	<0.00005	0.008	0.002	3.7	0.007	0.023	<0.0001	0.007	0.003	0.012	<0.05	0.003	<0.00005	<0.001	<0.001	<0.05	<0.001	0.021	<0.0001	<0.001	<0.001	<0.001
MW48	12/07/2016	8		83	0.03	0.0024	0.074	0.047	94	0.44	0.037	0.0005	0.12	0.008	6.9	0.07	<0.001	0.0015	<0.001	<0.001	<0.05	0.004	0.024	<0.0001	0.028	<0.001	3.3
MW49	12/07/2016	8		3.2	0.001	0.00008	0.033	0.008	3.3	0.015	0.011	0.001	0.004	0.001	0.025	0.05	<0.001	0.00005	<0.001	0.002	<0.05	0.005	0.01	0.0002	0.004	<0.001	0.022
MW52	12/07/2016	8		23	0.017	0.0014	0.019	0.048	18	0.022	0.1	0.0002	0.019	0.016	0.75	0.28	0.002	0.0014	<0.001	0.02	0.85	<0.001	0.095	<0.0001	0.01	0.012	0.54
MW53	12/07/2016	8		61	0.13	0.00051	0.039	0.016	74	0.12	0.064	0.0003	0.073	0.011	6.7	<0.05	0.016	<0.00005	<0.001	<0.001	35	<0.001	0.057	<0.0001	0.024	0.001	0.001
MW54	12/07/2016	8		29	0.038	<0.00005	0.051	0.018	460	0.13	0.15	0.0006	0.021	0.012	0.09	<0.05	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	0.031	<0.0001	0.001	<0.001	<0.001
MW33	18/08/2016	9		3.5	0.002	<0.00005	0.004	0.008	2.7	0.004	0.017	<0.0001	0.004	0.001	0.048	1.4	0.002	<0.00005	0.001	0.005	0.78	0.002	0.017	<0.0001	0.003	<0.001	0.046
MW34	18/08/2016	9		2.2	0.001	<0.00005	0.003	0.003	1.3	<0.001	<0.005	<0.0001	0.001	<0.001	0.006	0.83	<0.001										

Table 26
Groundwater Analytical Results - Others
Total and Dissolved Metals
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.05	0.001	0.024	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001
1. ANZECC FW 95%				0.055	0.002	<0.0005	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	NE
MW49	28/09/2016	10		1.8	0.001	0.00005	0.014	0.005	2.2	0.011	0.009	0.0008	0.003	0.001	0.006	0.09	<0.001	<0.00005	<0.001	<0.001	<0.05	0.004	0.008	<0.0001	0.003	<0.001	<0.005
MW52	20/09/2016	10		2.1	0.007	0.001	<0.005	0.19	8.5	<0.005	0.19	<0.0005	0.023	0.007	2.1	0.4	<0.005	0.001	<0.005	0.11	4.4	<0.005	0.18	<0.0005	0.019	<0.005	1.9
MW53	28/09/2016	10		2.8	0.028	0.00095	0.003	0.002	8.7	0.12	0.049	<0.0001	0.01	0.002	0.73	0.11	<0.001	0.00077	<0.001	<0.001	<0.05	0.055	0.043	<0.0001	0.008	<0.001	0.63
MW54	28/09/2016	10		0.61	0.006	<0.00005	0.002	0.001	9.2	0.003	0.029	<0.0001	0.002	0.004	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.019	<0.0001	<0.001	<0.001	<0.005
MW33	26/10/2016	11		0.27	<0.001	<0.00005	0.002	<0.001	0.09	<0.001	0.008	<0.0001	<0.001	<0.001	<0.005	0.22	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	0.008	<0.0001	<0.001	<0.001	<0.005
MW34	26/10/2016	11		1.1	0.002	<0.00005	0.003	0.002	1.6	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	0.97	0.002	<0.00005	<0.001	0.002	1.4	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005
MW35	26/10/2016	11		0.45	<0.001	<0.00005	0.002	0.002	0.28	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.39	<0.001	<0.00005	<0.001	0.002	0.24	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	26/10/2016	11		2.2	0.004	<0.00005	0.011	<0.001	0.33	0.003	0.006	<0.0001	0.003	0.003	<0.005	1.1	0.002	<0.00005	0.005	<0.001	0.07	<0.001	0.007	<0.0001	0.001	0.002	<0.005
MW44	26/10/2016	11		1.7	0.003	<0.00005	0.009	<0.001	0.73	0.003	<0.005	<0.0001	0.002	0.002	0.009	0.08	0.003	<0.00005	0.002	<0.001	0.25	0.002	<0.005	<0.0001	0.001	0.002	0.007
MW45	25/10/2016	11		0.34	<0.001	<0.00005	<0.001	<0.001	0.72	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005
MW47	25/10/2016	11		4	0.004	<0.00005	0.011	<0.001	3	0.007	0.014	<0.0001	0.006	0.003	0.022	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
MW48	24/10/2016	11		2.3	0.002	0.00028	0.023	0.002	5.5	0.014	0.023	<0.0001	0.013	<0.001	0.15	0.26	<0.001	0.00028	<0.001	<0.001	0.06	0.005	0.024	<0.0001	0.012	<0.001	0.13
MW49	24/10/2016	11		3.8	<0.001	0.00006	0.004	<0.001	0.93	0.002	0.011	0.0001	0.004	0.001	0.014	0.09	<0.001	0.00006	<0.001	0.001	<0.05	0.009	0.01	<0.0001	0.003	<0.001	0.014
MW52	24/10/2016	11		0.53	0.002	0.0011	0.002	0.023	2.6	<0.001	0.16	<0.0001	0.013	0.013	0.8	0.41	0.002	0.0011	0.002	0.027	2.1	<0.001	0.17	<0.0001	0.014	0.011	0.78
MW53	24/10/2016	11		0.29	<0.001	0.00023	<0.001	<0.001	0.64	0.014	0.048	<0.0001	0.004	<0.001	0.12	0.09	<0.001	0.00023	<0.001	<0.001	<0.05	0.014	0.046	<0.0001	0.004	<0.001	0.12
MW54	24/10/2016	11		0.11	<0.001	<0.00005	<0.001	<0.001	0.9	<0.001	0.02	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.018	<0.0001	<0.001	<0.001	<0.005
MW33	24/11/2016	12		0.41	<0.001	<0.00005	0.002	<0.001	0.15	<0.001	0.009	<0.0001	<0.001	<0.001	<0.005	0.34	<0.001	<0.00005	0.002	<0.001	0.15	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW34	24/11/2016	12		1.4	0.002	0.00005	0.002	0.004	1.5	<0.001	<0.005	<0.0001	0.002	0.001	<0.005	0.93	0.001	<0.00005	0.002	0.003	1	<0.001	<0.005	<0.0001	0.001	<0.001	0.032
MW35	24/11/2016	12		0.52	<0.001	<0.00005	<0.001	0.004	0.31	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.34	<0.001	<0.00005	<0.001	0.003	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	28/11/2016	12		1.8	0.004	0.00005	0.013	<0.001	0.12	<0.001	0.008	<0.0001	0.003	0.004	<0.005	0.99	0.003	0.00005	0.008	<0.001	<0.05	<0.001	0.007	<0.0001	0.001	0.002	<0.005
MW44	28/11/2016	12		1.8	0.003	<0.00005	0.009	<0.001	0.85	0.003	<0.005	<0.0001	0.002	0.002	0.009	0.06	0.003	<0.00005	0.003	<0.001	0.14	<0.001	<0.005	<0.0001	<0.001	0.002	<0.005
MW45	23/11/2016	12		0.72	0.002	<0.00005	0.002	<0.001	1.6	0.001	<0.005	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW47	23/11/2016	12		1.6	0.002	<0.00005	0.005	<0.001	1.1	0.004	0.016	<0.0001	0.003	0.002	0.01	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.013	<0.0001	<0.001	<0.001	<0.005
MW48	28/11/2016	12		1.6	<0.001	0.00016	0.001	<0.001	0.77	0.009	0.024	<0.0001	0.012	<0.001	0.016	0.12	<0.001	0.00017	<0.001	<0.001	0.1	<0.001	0.022	<0.0001	0.008	<0.001	0.008
MW49	28/11/2016	12		1	<0.001	<0.0002	0.002	0.007	0.82	0.15	0.014	0.0001	0.005	<0.001	0.038	<0.05	<0.001	<0.0002	<0.001	<0.001	0.31	0.006	0.013	<0.0001	0.003	<0.001	0.025
MW52	23/11/2016	12		0.37	0.004	0.00012	0.002	0.027	1.2	<0.001	0.22	<0.0001	0.023	0.014	0.79	0.18	0.004	0.0015	0.001	0.017	0.44	<0.001	0.2	<0.0001	0.019	0.014	0.63
MW53	23/11/2016	12		0.55	0.004	0.00008	<0.001	<0.001	4.4	0.018	0.047	<0.0001	0.003	<0.001	0.039	0.06	0.003	0.00008	<0.001	<0.001	2.8	0.004	0.047	<0.0001	0.003	<0.001	0.039
MW54	23/11/2016	12		0.2	0.003	0.00007	<0.001	<0.001	4.4	<0.001	0.041	<0.0001	<0.001	0.003	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.036	<0.0001	<0.001	0.003	<0.005
MW33	15/12/2016	13		0.41	<0.001	<0.00005	0.002	<0.001	0.33	<0.001	0.008	<0.0001	<0.001	<0.001	0.007	0.08	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.007	<0.0001	<0.001	<0.001	<0.005
MW34	15/12/2016	13		1.1	0.002	<0.00005	0.002	0.002	1.8	<0.001	<0.005	0.0001	<0.001	0.001	<0.005	0.37	0.001	<0.00005	<0.001	0.001	0.59	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW35	14/12/2016	13		0.55	<0.001	<0.00005	<0.001	0.003	0.27	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	0.25	<0.001	<0.00005	<0.001	0.001	0.1	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	19/12/2016	13		3.1	0.005	<0.00005	0.014	<0.001	0.34	0.004	0.008	0.0001	0.003	0.006	0.005	1.4	0.003	<0.00005	0.012	<0.001	0.07	<0.001	0.005	<0.0001	0.002	0.004	<0.005
MW44	19/12/2016	13		6.7	0.007	<0.00005	0.018	0.005	1.9	0.012	0.006	0.0001	0.003	0.008	0.044	0.15	0.007	<0.00005	0.006	<0.001	0.3	<0.001	<0.005	<0.0001	0.001	0.004	<0.005
MW45	14/12/2016	13		0.68	<0.001	<0.00005	0.001	<0.001	0.37	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW47	14/12/2016	13		0.54	<0.001	<0.00005	0.001	<0.001	0.18	<0.001	0.019	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.009	<0.0001	<0.001	<0.001	<0.005
MW48	14/12/2016	13		0.71	<0.001	<0.00005	<0.001	<0.001	1.3	0.002	0.03	<0.0001	0.006	<0.001	0.011	0.09	<0.001	<0.00005	<0.001	<0.001	0.93	<0.001	0.033	<0.0001	0.004	<0.001	0.006
MW49	14/12/2016	1																									

Table 26
Groundwater Analytical Results - Others
Total and Dissolved Metals
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR				0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.05	0.001	0.024	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001
1. ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
2. DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	NE
MW33	17/02/2017	15		0.35	<0.001	<0.00005	0.003	0.001	0.14	<0.001	0.009	<0.0001	<0.001	<0.001	0.012	0.28	<0.001	<0.00005	<0.001	<0.001	0.1	<0.001	0.009	<0.0001	<0.001	<0.001	0.01
MW34	16/02/2017	15		5.8	0.002	<0.00005	0.004	0.003	1.7	0.002	<0.005	<0.0001	0.001	<0.001	0.013	4.3	0.002	<0.00005	0.003	0.002	1.5	0.001	<0.005	<0.0001	<0.001	<0.001	0.013
MW35	17/02/2017	15		0.58	<0.001	<0.00005	0.001	0.002	0.18	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	0.56	<0.001	<0.00005	<0.001	0.002	0.17	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	17/02/2017	15		2.4	0.005	<0.00005	0.011	0.002	0.5	0.004	0.009	<0.0001	<0.001	0.007	0.083	1.7	0.003	<0.00005	0.008	<0.001	0.1	<0.001	0.008	<0.0001	<0.001	0.006	0.008
MW44	17/02/2017	15		1.6	0.028	<0.00005	0.005	0.008	0.68	0.007	<0.005	<0.0001	0.003	0.011	0.094	0.95	0.031	<0.00005	0.003	0.005	0.36	0.008	<0.005	<0.0001	0.005	0.01	0.1
MW45	16/02/2017	15		1.5	0.003	<0.00005	0.003	<0.001	2.5	0.002	<0.005	<0.0001	0.003	0.002	0.02	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW47	16/02/2017	15		1.1	0.003	<0.00005	0.003	0.001	0.79	0.002	0.014	<0.0001	0.003	0.004	0.029	<0.05	0.003	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.003	0.003	<0.005
MW48	21/02/2017	15		1.6	0.001	0.00025	0.001	<0.001	0.67	0.008	0.023	<0.0001	0.025	0.001	0.03	0.27	<0.001	0.00025	<0.001	<0.001	0.08	0.007	0.025	<0.0001	0.025	<0.001	0.031
MW49	21/02/2017	15		0.15	<0.001	<0.00005	<0.001	0.006	0.28	0.13	0.015	<0.0001	0.005	<0.001	0.08	<0.05	<0.001	<0.00005	<0.001	0.003	<0.05	0.057	0.022	<0.0001	0.006	<0.001	0.09
MW52	20/02/2017	15		0.47	0.003	0.0013	0.002	0.028	1.1	<0.001	0.16	<0.0001	0.012	0.012	1.1	0.32	0.003	0.0014	<0.001	0.01	0.36	<0.001	0.14	<0.0001	0.011	0.012	0.54
MW53	20/02/2017	15		0.16	0.012	0.0002	0.001	<0.001	8.3	0.006	0.11	<0.0001	0.017	0.001	0.66	0.07	0.014	<0.00005	<0.001	<0.001	8.2	0.001	0.11	<0.0001	0.015	<0.001	0.61
MW54	21/02/2017	15		0.06	0.002	<0.00005	<0.001	<0.001	2.4	<0.001	0.066	<0.0001	<0.001	<0.001	<0.005	<0.05	0.002	<0.00005	<0.001	<0.001	2.1	<0.001	0.067	<0.0001	<0.001	<0.001	<0.005
MW33	15/03/2017	16		0.3	<0.001	<0.0002	0.002	<0.001	0.11	<0.001	0.008	<0.0001	<0.001	0.002	<0.005	0.23	<0.001	<0.0002	0.001	<0.001	0.11	<0.001	0.008	<0.0001	<0.001	0.002	<0.005
MW34	15/03/2017	16		1.4	0.003	<0.00005	0.002	<0.001	2	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.62	0.003	<0.00005	0.001	0.001	1.6	<0.001	<0.005	<0.0001	<0.001	0.002	<0.005
MW35	15/03/2017	16		0.54	<0.001	<0.0002	<0.001	0.002	0.21	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	0.48	<0.001	<0.0002	<0.001	0.001	0.18	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	14/03/2017	16		11	0.014	<0.00005	0.022	0.002	3.8	0.025	0.009	0.0001	0.008	0.017	0.008	1.2	0.003	<0.00005	0.009	<0.001	0.09	<0.001	<0.005	<0.0001	0.002	0.005	<0.005
MW44	14/03/2017	16		13	0.014	<0.00005	0.024	0.005	4.4	0.023	0.006	<0.0001	0.006	0.017	0.04	0.08	0.009	<0.00005	0.005	<0.001	0.42	0.002	<0.005	<0.0001	0.003	0.006	<0.005
MW45	15/03/2017	16		0.9	0.002	<0.0002	0.002	0.001	1.2	0.002	<0.005	<0.0001	0.002	<0.001	0.057	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW47	15/03/2017	16		1.7	0.001	<0.0002	0.004	<0.001	0.84	0.001	0.008	<0.0001	0.001	<0.001	0.007	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	0.006	<0.0001	<0.001	<0.001	<0.005
MW48	14/03/2017	16		3	0.002	0.00018	0.003	0.001	2.3	0.014	0.026	<0.0001	0.011	0.002	0.014	0.18	0.001	<0.00005	<0.001	<0.001	0.12	0.008	0.021	<0.0001	0.014	0.002	0.007
MW49	14/03/2017	16		0.8	0.002	<0.00005	<0.001	0.006	0.94	0.25	0.014	<0.0001	0.005	<0.001	0.04	<0.05	<0.001	0.00009	<0.001	0.005	<0.05	0.21	0.011	<0.0001	0.004	0.001	0.034
MW52	14/03/2017	16		1.5	0.003	0.003	0.002	0.032	1.5	0.001	0.29	<0.0001	0.022	0.006	0.41	0.68	0.005	0.0026	0.001	0.027	0.83	<0.001	0.25	0.0002	0.02	0.02	0.36
MW53	14/03/2017	16		10	0.054	0.002	0.008	0.008	14	0.14	0.057	<0.0001	0.023	0.008	2	<0.05	0.004	<0.00005	<0.001	<0.001	0.11	0.001	0.044	<0.0001	0.008	0.006	0.12
MW54	14/03/2017	16		0.44	0.003	<0.00005	<0.001	<0.001	4.8	<0.001	0.12	<0.0001	<0.001	0.001	<0.005	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.095	<0.0001	<0.001	0.003	<0.005
MW33	13/04/2017	17		0.24	<0.001	<0.00005	0.002	<0.001	0.14	<0.001	0.008	<0.0001	<0.001	<0.001	<0.005	0.2	<0.001	<0.00005	0.001	<0.001	0.09	<0.001	0.008	<0.0001	<0.001	0.001	<0.005
MW34	13/04/2017	17		0.42	0.002	<0.00005	<0.001	<0.001	1.7	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.38	0.002	<0.00005	<0.001	<0.001	1.4	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW35	13/04/2017	17		0.5	<0.001	<0.00005	<0.001	0.002	0.16	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	0.47	<0.001	<0.00005	<0.001	0.002	0.21	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW43	18/04/2017	17		1.9	0.004	<0.00005	0.01	<0.001	0.24	0.002	0.008	<0.0001	0.003	0.003	0.008	1.4	0.003	<0.00005	0.01	<0.001	0.09	<0.001	<0.005	<0.0001	0.002	0.003	<0.005
MW44	18/04/2017	17		2.8	0.006	<0.00005	0.011	0.003	1.4	0.007	<0.005	<0.0001	0.003	0.009	0.012	0.11	0.004	<0.00005	0.005	<0.001	0.35	<0.001	<0.005	<0.0001	0.001	0.003	<0.005
MW45	10/04/2017	17		1.5	0.002	<0.00005	0.002	<0.001	0.56	<0.001	<0.005	<0.0001	0.001	<0.001	0.02	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW47	10/04/2017	17		1.3	<0.001	<0.00005	0.002	<0.001	0.37	<0.001	0.01	<0.0001	<0.001	<0.001	0.008	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
MW48	10/04/2017	17		2.4	<0.001	<0.00005	0.001	<0.001	0.57	0.004	0.019	<0.0001	0.009	<0.001	0.015	0.09	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.023	<0.0001	0.008	<0.001	<0.005
MW49	10/04/2017	17		0.78	0.001	<0.00005	<0.001	0.004	0.49	0.2	0.01	<0.0001	0.004	<0.001	0.025	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	0.025	0.011	<0.0001	0.003	<0.001	0.016
MW52	10/04/2017	17		0.52	0.004	0.0012	0.002	0.012	0.39	<0.001	0.17	<0.0001	0.016	0.012	0.25	0.13	0.004	0.00091	0.002	0.013	0.27	<0.001	0.17	<0.0001	0.015	0.012	0.083
MW53	10/04/2017	17		0.34	0.006	<0.00005	<0.001	<0.001	2.6	0.002	0.038	<0.0001	0.003	<0.001	0.057	<0.05	0.003	<0.00005	<0.001	<0.001	<0.05	<0.001	0.045	<0.0001	0.002	<0.001	0.05
MW54	10/04/2017	17		0.18	0.002	<0.00005	<0.001	<0.001	1.5	<0.001	0.11	<0.0001	<0.001	<0.001	<0.005	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.05	<0.0001	<0.001	<0.001	<0.005

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
12282922	17/12/2015	1		6.2	510	650	14	25	-	25	<10	44	100	0.6	0.4	0.6
4766	17/12/2015	1		6.2	230	270	14	<20	-	<20	<10	20	38	0.7	0.5	1.0
4816	18/12/2015	1		6.3	120	190	<10	<20	-	<20	<10	8.6	36	0.5	0.2	2.3
5259	17/12/2015	1		4.3	160	260	21	<20	-	<20	<10	14	55	1.1	0.3	1.4
5399	15/12/2015	1		5.9	220	310	34	<20	-	<20	<10	13	52	1.7	0.3	1.5
5514	15/12/2015	1		5.1	270	200	42	23	-	23	<10	<5	47	1.8	0.1	4.0
GW01	17/12/2015	1		4.5	190	250	21	<20	-	<20	<10	12	60	1.1	0.2	1.7
GW02	17/12/2015	1		7.9	450	680	<10	280	-	280	<10	15	39	0.0	0.4	18.7
GW05	15/12/2015	1		7.0	160	190	12	36	-	36	<10	6.9	24	0.3	0.3	5.2
GW07	14/12/2015	1		5.7	530	460	44	22	-	22	<10	<5	130	2.0	0.0	4.4
GW09	14/12/2015	1		5.6	2100	4000	26	<20	-	<20	<10	41	1200	1.3	0.0	0.5
GW1	18/12/2015	1		8.0	400	560	<10	130	-	130	<10	13	47	0.1	0.3	10.0
GW5	18/12/2015	1		7.7	460	700	<10	100	-	100	<10	44	82	0.1	0.5	2.3
NLBH05	18/12/2015	1		7.9	180	310	<10	83	-	83	<10	8.8	46	0.1	0.2	9.4
NLBH06	17/12/2015	1		5.7	210	350	17	<20	-	<20	<10	13	70	0.9	0.2	1.5
NLBH08	17/12/2015	1		6.6	120	180	<10	28	-	28	<10	9.7	17	0.4	0.6	2.9
NLBH09	17/12/2015	1		6.6	190	280	<10	47	-	47	<10	16	27	0.2	0.6	2.9
NLBH11	17/12/2015	1		6.3	170	260	11	34	-	34	<10	<5	62	0.3	0.1	6.8
NL-BH18C	14/12/2015	1		4.5	6700	11,000	24	<20	-	<20	<10	150	3800	1.2	0.0	0.1
NLBH21	17/12/2015	1		4.0	160	240	47	<20	-	<20	<10	23	31	2.4	0.7	0.9
NL-BH24	15/12/2015	1		5.5	190	220	28	25	-	25	<10	<5	53	1.1	0.1	5.0
NL-BH26	14/12/2015	1		5.9	130	200	14	<20	-	<20	<10	<5	50	0.7	0.1	4.0
MW33	1/02/2016	2		7	260	340	<10	72	<10	72	<10	<5	65	0.14	0.08	14.40
MW34	1/02/2016	2		5.6	410	330	33	<20	<10	<20	<10	<5	80	1.65	0.06	4.00
MW35	1/02/2016	2		4.2	340	270	48	<20	<10	<20	<10	5.7	59	2.40	0.10	3.51
MW43	3/02/2016	2		7.7	3200	4100	37	130	<10	130	<10	16	1300	0.28	0.01	8.13
MW44	3/02/2016	2		8	1000	1500	<10	220	<10	220	<10	<5	360	0.05	0.01	44.00
MW45	3/02/2016	2		8.5	990	1800	<10	220	<10	200	13	8.6	470	0.05	0.02	25.58
MW47	3/02/2016	2		8.4	1200	2100	<10	220	<10	210	<10	12	560	0.05	0.02	18.33
MW48	2/02/2016	2		4.8	1700	2900	23	<20	<10	<20	<10	40	920	1.15	0.04	0.50
MW49	2/02/2016	2		5.8	3200	5100	31	<20	<10	<20	<10	74	1600	1.55	0.05	0.27
MW52	3/02/2016	2		8.1	25,000	37,000	15	210	<10	210	<10	470	13,000	0.07	0.04	0.45
MW53	4/02/2016	2		5	3700	6800	12	<20	<10	<20	<10	81	2300	0.60	0.04	0.25
MW54	5/02/2016	2		8	690	1100	<10	100	<10	100	<10	11	290	0.10	0.04	9.09
MW33	22/02/2016	3		7.1	240	360	<10	65	<10	65	<10	<5	67	0.15	0.07	13.00
MW34	22/02/2016	3		5.5	410	330	28	<20	<10	<20	<10	<5	82	1.40	0.06	4.00
MW35	22/02/2016	3		4.4	390	270	51	<20	<10	<20	<10	9.6	58	2.55	0.17	2.08
MW43	18/02/2016	3		7.6	3500	4200	38	130	<10	130	<10	12	1200	0.29	0.01	10.83
MW44	18/02/2016	3		8	1100	1600	<10	230	<10	230	<10	<5	370	0.04	0.01	46.00
MW45	18/02/2016	3		8.4	1100	1900	<10	210	<10	210	18	11	470	0.05	0.02	19.09
MW47	18/02/2016	3		8.2	1400	2500	<10	210	<10	210	<10	14	660	0.05	0.02	15.00
MW48	18/02/2016	3		4.7	1700	3200	17	<20	<10	<20	<10	39	870	0.85	0.04	0.51
MW49	18/02/2016	3		6.1	2900	5700	15	<20	<10	<20	<10	79	1700	0.75	0.05	0.25
MW52	24/02/2016	3		7.4	24000	38000	16	170	<10	170	<10	430	12000	0.09	0.04	0.40
MW53	24/02/2016	3		5.2	3900	7000	23	<20	<10	<20	<10	74	2200	1.15	0.03	0.27
MW54	24/02/2016	3		7.2	620	1000	<10	100	<10	100	<10	11	290	0.10	0.04	9.09
MW33	18/03/2016	4		7.2	240	390	12	-	<10	87	<10	<5	67	-	0.07	-
MW34	18/03/2016	4		5.3	350	280	33	-	<10	<20	<10	<5	78	-	0.06	-
MW35	18/03/2016	4		4.3	390	250	62	-	<10	<20	<10	6.9	54	-	0.13	-
MW42	16/03/2016	4		4.3	180	200	23	-	<10	<20	<10	<5	48	-	0.10	-
MW43	16/03/2016	4		7	3700	3800	27	-	<10	140	<10	12	1200	-	0.01	-
MW44	16/03/2016	4		7.8	960	1500	<10	-	<10	210	<10	<5	380	-	0.01	-
MW45	22/03/2016	4		8.2	1000	1800	<10	210	<10	210	<10	8.1	450	0.05	0.02	25.93
MW47	22/03/2016	4		8.2	1300	2400	<10	220	<10	220	<10	12	610	0.05	0.02	18.33
MW48	16/03/2016	4		4.6	1800	2900	17	-	<10	<20	<10	45	880	-	0.05	-
MW49	16/03/2016	4		5.7	3300	5100	23	-	<10	<20	<10	84	1700	-	0.05	-
MW52	16/03/2016	4		7.8	24,000	38,000	16	-	<10	180	<10	420	13,000	-	0.03	-
MW53	16/03/2016	4		5.8	3700	6300	22	-	<10	<20	<10	71	2100	-	0.03	-
MW54	16/03/2016	4		7.7	740	1200	<10	-	<10	100	<10	9.6	310	-	0.03	-
MW33	14/04/2016	5		7.2	240	360	11	-	<10	87	<10	<5	64	-	0.08	-
MW34	14/04/2016	5		5.3	360	330	30	-	<10	<20	<10	6	79	-	0.08	-
MW35	14/04/2016	5		4.4	420	270	66	-	<10	<20	<10	6.1	65	-	0.09	-
MW43	12/04/2016	5		6.8	3200	4000	49	-	<10	150	<10	20	1200	-	0.02	-
MW44	12/04/2016	5		8	1500	2300	<10	-	<10	390	<10	31	480	-	0.06	-
MW45	13/04/2016	5		8.1	1000	1700	<10	-	<10	250	<10	13	480	-	0.03	-
MW47	13/04/2016	5		8.4	1400	2400	<10	-	<10	240	<10	12	650	-	0.02	-
MW48	12/04/2016	5		4.6	1600	2900	17	-	<10	<20	<10	43	920	-	0.05	-
MW49	12/04/2016	5		5.9	2900	5200	30	-	<10	<20	<10	65	1700	-	0.04	-
MW52	12/04/2016	5		7.9	20,000	32,000	13	-	<10	150	<10	390	8700	-	0.04	-
MW53	12/04/2016	5		4.1	4600	8400	30	-	<10	<20	<10	80	2800	-	0.03	-
MW54	12/04/2016	5		7.8	690	1200	<10	-	<10	110	<10	10	320	-	0.03	-
MW33	3/05/2016	6		6.7	230	340	32	90	<10	90	<10	<5	68	0.36	0.07	4.00
MW34	3/05/2016	6		4.9	310	350	35	<20	<10	<20	<10	9.5	74	1.75	0.13	2.11
MW35	5/05/2016	6		4.1	440	280	63	<20	<10	<20	<10	7.3	72	3.15	0.10	2.74
MW43	4/05/2016	6		6.4	3500	3900	28	180	<10	180	<10	17	1200	0.16	0.01	10.59
MW44	4/05/2016	6		8	1500	2300	<10	420	<10	420	<10	28	450	0.02	0.06	15.00
MW45	5/05/2016	6		7.8	950	1400	<10	240	<10	240	<10	11	350	0.04	0.03	21.82
MW47	5/05/2016	6		8.1	1500	2100	<10	250	<10	250	<10	15	540	0.04	0.03	16.67
MW48	4/05/2016	6		4.6	1700	2700	48	<20	<10	<20	<10	45	870	2.40	0.05	0.44
MW49	4/05/2016	6		4.7	2800	4200	39	<20	<10	<20	<10	63	1500	1.95	0.04	

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%	
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW33	23/06/2016	7		7	270	350	20	69	<10	<10	<10	<5	68	0.29	0.07	13.80
MW34	23/06/2016	7		5.2	450	400	56	<20	<10	<20	<10	13	65	2.80	0.20	1.54
MW35	23/06/2016	7		4.5	390	320	54	<20	<10	<20	<10	8.1	74	2.70	0.11	2.47
MW43	22/06/2016	7		6.9	3200	3700	240	140	<10	140	<10	12	1200	1.71	0.01	11.67
MW44	22/06/2016	7		8	1200	1800	800	300	<10	300	<10	13	380	2.67	0.03	23.08
MW45	22/06/2016	7		7.9	1100	1700	640	230	<10	230	<10	8.5	440	2.78	0.02	27.06
MW47	22/06/2016	7		8	1300	2200	57	250	<10	250	<10	16	530	0.23	0.03	15.63
MW48	22/06/2016	7		4.6	1700	3000	150	<20	<10	<20	<10	44	900	7.50	0.05	0.45
MW49	22/06/2016	7		4.9	2700	4700	70	<20	<10	<20	<10	69	1400	3.50	0.05	0.29
MW52	21/06/2016	7		6.1	12,000	15,000	37	<20	<10	<20	<10	190	6000	1.85	0.03	0.11
MW53	21/06/2016	7		6.1	7900	12,000	72	30	<10	30	<10	130	3900	2.40	0.03	0.23
MW54	21/06/2016	7		7.1	920	1400	26	110	<10	110	<10	13	360	0.24	0.04	8.46
MW33	14/07/2016	8		6.6	270	360	-	72	<10	72	<10	<5	65	-	0.08	14.40
MW34	14/07/2016	8		4.7	520	420	-	<20	<10	<20	<10	20	91	-	0.22	1.00
MW35	14/07/2016	8		4.2	400	370	-	<20	<10	<20	<10	7.7	78	-	0.10	2.60
MW43	13/07/2016	8		6.6	3100	4100	52	140	<10	140	<10	<50	1100	0.37	0.05	2.80
MW44	13/07/2016	8		7.4	1400	1700	20	310	<10	310	<10	23	460	0.06	0.05	13.48
MW45	13/07/2016	8		7.8	1000	1800	<10	210	<10	210	<10	6.7	390	0.05	0.02	31.34
MW47	13/07/2016	8		8	1200	2200	<10	250	<10	250	<10	11	480	0.04	0.02	22.73
MW48	12/07/2016	8		5	1700	2600	97	<20	<10	<20	<10	43	820	4.85	0.05	0.47
MW49	12/07/2016	8		4.9	2300	4000	77	<20	<10	<20	<10	68	1300	3.85	0.05	0.29
MW52	12/07/2016	8		6.2	11,000	16,000	47	35	<10	35	<10	160	4800	1.34	0.03	0.22
MW53	12/07/2016	8		6	4200	7700	70	32	<10	32	<10	83	2400	2.19	0.03	0.39
MW54	12/07/2016	8		6.9	780	1400	<10	120	<10	120	<10	13	330	0.08	0.04	9.23
MW33	18/08/2016	9		5.7	980	770	97	50	<10	50	<10	18	170	1.94	0.11	2.78
MW34	18/08/2016	9		5	410	250	68	<20	<10	<20	<10	8.4	61	3.40	0.14	2.38
MW35	18/08/2016	9		3.9	490	350	110	<20	<10	<20	<10	15	71	5.50	0.21	1.33
MW43	15/08/2016	9		6.5	3100	4000	73	140	<10	140	<10	9.8	1200	0.52	0.01	14.29
MW44	15/08/2016	9		7.2	1200	1600	20	210	<10	210	<10	<5	390	0.10	0.01	42.00
MW45	18/08/2016	9		7.6	990	1800	10	230	<10	230	<10	5.3	470	0.04	0.01	43.40
MW47	18/08/2016	9		7.9	1300	2200	<10	260	<10	260	<10	15	490	0.04	0.03	17.33
MW48	15/08/2016	9		4.5	1800	3100	51	<20	<10	<20	<10	43	880	2.55	0.05	0.47
MW49	15/08/2016	9		4.8	2700	4900	53	<20	<10	<20	<10	68	1500	2.65	0.05	0.29
MW52	15/08/2016	9		7.1	25000	37000	60	190	<10	190	<10	460	13000	0.32	0.04	0.41
MW53	15/08/2016	9		4.9	4000	7200	96	<20	<10	<20	<10	78	2000	4.80	0.04	0.26
MW54	15/08/2016	9		7.7	1300	2200	17	170	<10	170	<10	25	490	0.10	0.05	6.80
MW33	27/09/2016	10		6.6	350	350	59	65	<10	65	<10	<5	77	0.91	0.03	13.00
MW34	20/09/2016	10		5.3	480	240	57	20	<10	20	<10	-	54	2.85	#	#
MW35	27/09/2016	10		4.1	470	320	84	<20	<10	<20	<10	15	73	4.20	0.21	1.33
MW43	27/09/2016	10		6.4	2900	4000	95	150	<10	150	<10	21	1300	0.63	0.02	7.14
MW44	21/09/2016	10		7.4	1400	1500	16	210	<10	210	<10	-	390	0.08	#	#
MW45	3/10/2016	10		8.2	1000	1700	<10	220	<10	220	<10	<5	440	0.05	0.01	44.00
MW47	3/10/2016	10		8.3	1200	1900	<10	250	<10	240	<10	8.5	460	0.04	0.02	29.41
MW48	20/09/2016	10		4.6	1700	3000	35	<20	<10	<20	<10	-	820	1.75	#	#
MW49	28/09/2016	10		4.8	2400	4300	38	<20	<10	<20	<10	68	1300	1.90	0.05	0.29
MW52	20/09/2016	10		6.8	19,000	29,000	37	120	<10	120	<10	-	9700	0.31	#	#
MW53	28/09/2016	10		5.7	3500	6100	57	<20	<10	<20	<10	76	2100	2.85	0.04	0.26
MW54	28/09/2016	10		7.4	1600	2500	21	190	<10	190	<10	35	610	0.11	0.06	5.43
MW33	26/10/2016	11		6.7	270	350	34	76	<10	76	<10	<5	64	0.45	0.08	15.20
MW34	26/10/2016	11		5.4	530	300	91	29	<10	29	<10	8.3	59	3.14	0.14	3.49
MW35	26/10/2016	11		4.2	370	210	94	<20	<10	<20	<10	<5	44	4.70	0.11	4.00
MW43	26/10/2016	11		6.3	2600	4000	73	150	<10	150	<10	13	1200	0.49	0.01	11.54
MW44	26/10/2016	11		7.2	1100	1400	19	190	<10	190	<10	28	350	0.10	0.08	6.79
MW45	25/10/2016	11		7.7	960	1700	<10	230	<10	230	<10	<5	460	0.04	0.01	46.00
MW47	25/10/2016	11		8.1	860	1600	<10	190	<10	190	<10	10	440	0.05	0.02	19.00
MW48	24/10/2016	11		4.8	1700	3000	48	<20	<10	<20	<10	42	800	2.40	0.05	0.48
MW49	24/10/2016	11		7.5	2700	3900	29	140	<10	140	<10	70	1200	0.21	0.06	2.00
MW52	24/10/2016	11		6.4	17000	26000	69	120	<10	120	<10	310	9400	0.58	0.03	0.39
MW53	24/10/2016	11		4.7	3600	6600	46	<20	<10	<20	<10	78	2200	2.30	0.04	0.26
MW54	24/10/2016	11		7.3	1000	1600	13	150	<10	150	<10	17	440	0.09	0.04	8.82
MW33	24/11/2016	12		7.2	250	350	11	73	<10	73	<10	<5	66	0.15	0.08	14.60
MW34	24/11/2016	12		5.6	510	200	52	21	<10	21	<10	8.5	47	2.48	0.18	2.47
MW35	24/11/2016	12		4.2	360	200	80	<20	<10	<20	<10	<5	40	4.00	0.13	4.00
MW43	28/11/2016	12		6.6	3700	3900	44	160	<10	160	<10	15	1200	0.28	0.01	10.67
MW44	28/11/2016	12		7.3	1200	1400	19	230	<10	230	<10	<5	380	0.08	0.01	46.00
MW45	23/11/2016	12		7.7	1000	1800	<10	230	<10	230	<10	6.6	470	0.04	0.01	34.85
MW47	23/11/2016	12		7.9	1300	2000	<10	210	<10	210	<10	11	520	0.05	0.02	19.09
MW48	28/11/2016	12		4.5	1700	2900	51	<20	<10	<20	<10	130	740	2.55	0.18	0.15
MW49	28/11/2016	12		5.2	2800	5000	27	<20	<10	<20	<10	240	1400	1.35	0.17	0.08
MW52	23/11/2016	12		7.2	19000	29000	33	140	<10	140	<10	340	9700	0.24	0.04	0.41
MW53	23/11/2016	12		5.5	3800	6800	30	<20	<10	<20	<10	73	2100	1.50	0.03	0.27
MW54	23/11/2016	12		6.9	990	1500	10	130	<10	130	<10	15	400	0.08	0.04	8.67

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 MW = Monitoring well
 µS/cm = Microsiemens per centimetre

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
Units				pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%	
LOR				0.01	10	1	10	20	10	20	10	5	1	-	-	-
1. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. DER 2015				Lower - 6 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE	NE	>0.5	<5
MW33	15/12/2016	13		6.6	210	350	20	82	<10	82	<10	<5	62	0.24	0.08	16.40
MW34	15/12/2016	13		5.4	350	290	69	35	<10	35	<10	<5	62	1.97	0.08	7.00
MW35	14/12/2016	13		4.2	480	150	68	<20	<10	<20	<10	24	35	3.40	0.69	0.83
MW43	19/12/2016	13		6.6	2700	3900	93	160	<10	160	<10	82	1200	0.58	0.07	1.95
MW44	19/12/2016	13		7.6	1000	1400	18	210	<10	210	<10	60	360	0.09	0.17	3.50
MW45	14/12/2016	13		7.9	1900	1700	<10	240	<10	240	<10	21	460	0.04	0.05	11.43
MW47	14/12/2016	13		7.9	1200	2100	<10	220	<10	220	<10	37	540	0.05	0.07	5.95
MW48	14/12/2016	13		4.8	1600	2600	38	<20	<10	<20	<10	130	760	1.90	0.17	0.15
MW49	14/12/2016	13		5.1	2600	4500	17	<20	<10	<20	<10	250	1400	0.85	0.18	0.08
MW52	14/12/2016	13		6.7	18000	29000	20	160	<10	160	<10	1100	9900	0.13	0.11	0.15
MW53	14/12/2016	13		5.8	3500	6500	18	<20	<10	<20	<10	220	2200	0.90	0.10	0.09
MW54	14/12/2016	13		7.5	870	1400	<10	130	<10	130	<10	44	390	0.08	0.11	2.95
MW33	23/01/2017	14		6.8	230	350	30	69	<10	69	<10	<5	71	0.43	0.04	27.60
MW34	19/01/2017	14		6	420	310	40	65	<10	65	<10	<5	53	0.62	0.05	26.00
MW35	23/01/2017	14		4.6	330	180	100	<20	<10	<20	<10	25	42	10.00	0.60	0.40
MW43	19/01/2017	14		6.3	3400	4000	90	160	<10	160	<10	42	1200	0.56	0.04	3.81
MW44	19/01/2017	14		7.2	1000	1400	10	210	<10	210	<10	20	350	0.05	0.06	10.50
MW45	19/01/2017	14		7.7	1000	1800	<10	240	<10	240	<10	21	450	0.02	0.05	11.43
MW47	18/01/2017	14		7.8	1300	2100	<10	230	<10	230	<10	34	510	0.02	0.07	6.76
MW48	18/01/2017	14		5.6	1700	2900	40	<20	<10	<20	<10	120	810	4.00	0.15	0.08
MW49	18/01/2017	14		5.1	3000	5200	37	<20	<10	<20	<10	250	1500	3.70	0.17	0.04
MW52	18/01/2017	14		6.8	20,000	36,000	30	170	<10	170	<10	1200	12,000	0.18	0.10	0.14
MW53	18/01/2017	14		5.1	3700	6700	42	<20	<10	<20	<10	200	2100	4.20	0.10	0.05
MW54	18/01/2017	14		6.9	890	1400	18	110	<10	110	<10	29	370	0.16	0.08	3.79
MW33	17/02/2017	15		7.4	280	350	25	78	<10	78	<10	<5	76	0.32	0.03	31.20
MW34	16/02/2017	15		6.1	510	360	52	40	<10	40	<10	33	63	1.30	0.52	1.21
MW35	17/02/2017	15		3.9	390	210	99	<20	<10	<20	<10	59	33	9.90	1.79	0.17
MW43	17/02/2017	15		6.4	3400	4000	97	150	<10	150	<10	75	1300	0.65	0.06	2.00
MW44	17/02/2017	15		7.8	880	930	<10	180	<10	180	<10	90	190	0.03	0.47	2.00
MW45	16/02/2017	15		7.8	1000	1700	<10	230	<10	230	<10	25	480	0.02	0.05	9.20
MW47	16/02/2017	15		8.1	1600	2600	<10	290	<10	290	<10	120	570	0.02	0.21	2.42
MW48	21/02/2017	15		4.7	1700	2900	49	<20	<10	<20	<10	120	760	2.45	0.16	0.08
MW49	21/02/2017	15		5.2	2900	5000	38	<20	<10	<20	<10	250	1500	1.90	0.17	0.04
MW52	20/02/2017	15		7.3	23,000	36,000	28	130	<10	130	<10	1300	13,000	0.22	0.10	0.10
MW53	20/02/2017	15		5.9	4700	8100	54	<20	<10	<20	<10	290	2700	2.70	0.11	0.03
MW54	21/02/2017	15		7.5	940	1400	15	130	<10	130	<10	40	390	0.12	0.10	3.25
MW33	15/03/2017	16		7	260	330	31	76	<10	76	<10	<5	67	0.41	0.04	30.40
MW34	15/03/2017	16		6	470	350	69	52	<10	52	<10	<50	61	1.33	0.82	2.08
MW35	15/03/2017	16		4.4	340	200	95	<20	<10	<20	<10	25	42	4.75	0.60	0.40
MW43	14/03/2017	16		6.2	3400	4200	140	130	<10	130	<10	45	1200	1.08	0.04	2.89
MW44	14/03/2017	16		7.6	910	1400	13	220	<10	220	<10	22	300	0.06	0.07	10.00
MW45	15/03/2017	16		7.9	1100	1800	13	230	<10	230	<10	25	450	0.06	0.06	9.20
MW47	15/03/2017	16		7.9	1100	2000	<10	220	<10	220	<10	37	470	0.02	0.08	5.95
MW48	14/03/2017	16		4.5	1700	3100	72	<20	<10	<20	<10	120	710	3.60	0.17	0.08
MW49	14/03/2017	16		5.1	2800	5600	53	<20	<10	<20	<10	260	1600	2.65	0.16	0.04
MW52	14/03/2017	16		3.7	13,000	22,000	50	<20	<10	<20	<10	650	6900	2.50	0.09	0.02
MW53	14/03/2017	16		5.7	3800	7400	61	<20	<10	<20	<10	220	2300	3.05	0.10	0.05
MW54	14/03/2017	16		7.2	920	1500	18	130	<10	130	<10	34	380	0.14	0.09	3.82
MW33	13/04/2017	17		6.9	310	430	17	72	<10	72	<10	<5	67	0.24	0.04	28.80
MW34	13/04/2017	17		6.8	440	330	66	110	<10	110	<10	<50	57	0.60	0.44	4.40
MW35	13/04/2017	17		4.4	420	220	100	<20	<10	<20	<10	26	42	5.00	0.62	0.38
MW43	18/04/2017	17		6.4	3600	4200	140	150	<10	150	<10	44	1200	0.93	0.04	3.41
MW44	18/04/2017	17		7.3	990	1800	22	180	<10	180	<10	48	350	0.12	0.14	3.75
MW45	10/04/2017	17		7.8	1100	2000	<10	220	<10	220	<10	9.2	460	0.02	0.02	23.91
MW47	10/04/2017	17		7.9	1100	2200	<10	210	<10	210	<10	27	470	0.02	0.06	7.78
MW48	10/04/2017	17		4.4	1800	3200	120	<20	<10	<20	<10	110	850	6.00	0.13	0.09
MW49	10/04/2017	17		5.1	3200	5500	86	<20	<10	<20	<10	220	1600	4.30	0.14	0.05
MW52	10/04/2017	17		6.9	20,000	28,000	45	100	<10	100	<10	870	9900	0.45	0.09	0.11
MW53	10/04/2017	17		4.6	4000	7200	86	<20	<10	<20	<10	180	2100	4.30	0.09	0.06
MW54	10/04/2017	17		7.2	1100	1700	35	110	<10	110	<10	31	400	0.32	0.08	3.55

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 MW = Monitoring well
 µS/cm = Microsiemens per centimetre

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
 Result Values in highlighted cells exceed nominated IL (2)
 Result Values in highlighted cells exceed laboratory LOR

Table 28
Groundwater Analytical Results - Others
Nutrients and Major Cations
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
12282922	17/12/2015	1		0.41	1	<0.02	<0.02	<0.05	-	1	<0.05	<0.05	13	29	63	1.5	
4766	17/12/2015	1		0.74	1.3	<0.02	<0.02	<0.05	-	1.3	<0.05	<0.05	7.8	15	14	2	
4816	18/12/2015	1		0.69	1.4	<0.02	<0.02	<0.05	-	1.4	0.56	0.74	6.4	5.2	24	3	
5259	17/12/2015	1		0.28	0.3	0.13	<0.02	0.13	-	0.4	<0.05	<0.05	10	4.8	29	1.6	
5399	15/12/2015	1		0.22	0.8	0.02	<0.02	<0.05	-	0.8	<0.05	<0.05	5.4	11	33	1.9	
5514	15/12/2015	1		0.10	2.2	0.03	<0.02	<0.05	-	2.2	0.17	0.11	4.7	4.2	25	4.3	
GW01	17/12/2015	1		0.23	0.4	<0.02	<0.02	<0.05	-	0.5	<0.05	<0.05	2.8	6.9	33	1.2	
GW02	17/12/2015	1		0.02	0.5	1.2	0.03	1.2	-	1.7	0.83	0.67	84	7	45	26	
GW05	15/12/2015	1		0.07	1	0.18	0.05	0.23	-	1.2	0.36	0.28	17	4.4	16	1.3	
GW07	14/12/2015	1		1.80	3.8	<0.2	<0.2	<0.5	-	3.8	0.2	0.16	3.1	7	61	3.3	
GW09	14/12/2015	1		0.04	0.2	<0.02	<0.02	<0.05	-	0.3	<0.05	<0.05	13	84	570	6.6	
GW1	18/12/2015	1		0.04	1.3	8.5	0.2	8.7	-	10	0.13	0.09	65	9.8	31	6.8	
GW5	18/12/2015	1		0.14	<0.2	1.5	0.07	1.5	-	1.5	<0.05	<0.05	50	9.3	70	13	
NLBH05	18/12/2015	1		0.44	0.5	<0.02	<0.02	<0.05	-	0.5	<0.05	<0.05	15	11	33	1.6	
NLBH06	17/12/2015	1		1.30	1.7	<0.02	<0.02	<0.05	-	1.7	<0.05	<0.05	6	10	39	5.1	
NLBH08	17/12/2015	1		0.35	0.6	<0.02	<0.02	<0.05	-	0.6	<0.05	<0.05	8.4	7.7	13	1	
NLBH09	17/12/2015	1		0.30	0.5	<0.02	<0.02	<0.05	-	0.6	<0.05	<0.05	19	10	16	2.5	
NLBH11	17/12/2015	1		0.20	0.4	<0.02	<0.02	<0.05	-	0.4	<0.05	<0.05	4.5	3.7	36	2	
NL-BH18C	14/12/2015	1		0.22	0.3	0.12	<0.02	0.12	-	0.4	<0.05	<0.05	54	250	1900	16	
NLBH21	17/12/2015	1		0.30	0.5	<0.02	<0.02	<0.05	-	0.5	<0.05	<0.05	3.9	3.1	29	1.3	
NL-BH24	15/12/2015	1		0.37	1.2	<0.02	<0.02	<0.05	-	1.2	0.57	0.47	2.6	4.3	32	2.2	
NL-BH26	14/12/2015	1		0.37	0.8	0.07	<0.02	0.07	-	0.9	0.09	0.07	2.7	2.7	24	1.9	
MW33	1/02/2016	2		0.43	0.9	<0.02	<0.02	-	0.5	0.9	0.09	0.06	23	4.8	34	2.5	
MW34	1/02/2016	2		<0.01	3.4	<0.02	<0.02	-	3.4	3.4	1.2	0.82	9.7	5.7	35	9.8	
MW35	1/02/2016	2		0.86	2.5	<0.02	<0.02	-	1.6	2.5	0.27	0.75	10	5.1	24	9.2	
MW43	3/02/2016	2		1.10	7.6	<0.02	<0.02	<0.05	-	7.6	0.12	<0.05	63	100	540	6.2	
MW44	3/02/2016	2		0.21	<0.2	<0.02	<0.02	<0.05	-	<0.2	0.15	<0.05	27	25	230	4	
MW45	3/02/2016	2		0.24	1.6	<0.02	<0.02	<0.05	-	1.6	0.14	0.07	65	35	210	4.5	
MW46	3/02/2016	2		0.47	2.2	<0.02	<0.02	<0.05	-	2.2	0.16	<0.05	110	63	340	5.6	
MW47	3/02/2016	2		0.10	<0.2	<0.02	<0.02	<0.05	-	<0.2	0.28	0.06	66	39	290	4.9	
MW48	2/02/2016	2		0.06	<0.2	0.15	<0.02	-	<0.2	0.2	<0.05	<0.05	13	64	440	8.6	
MW49	2/02/2016	2		0.03	<0.2	<0.02	<0.02	-	<0.2	<0.2	0.05	<0.05	28	140	750	13	
MW53	2/02/2016	2		0.06	0.3	<0.02	<0.02	-	0.2	0.3	0.09	<0.05	42	180	990	16	
MW54	2/02/2016	2		0.03	<0.2	<0.02	<0.02	-	<0.2	<0.2	0.39	<0.05	51	19	130	7.1	
MW33	22/02/2016	3		0.50	1.1	<0.02	<0.02	<0.05	-	1.1	0.09	<0.05	25	5	33	3.2	
MW34	22/02/2016	3		0.17	3.3	<0.02	<0.02	<0.05	-	3.3	0.79	0.58	10	5.7	38	9.1	
MW35	22/02/2016	3		0.64	4.1	<0.02	<0.02	<0.05	-	4.1	0.74	0.68	11	4.6	25	9.5	
MW43	18/02/2016	3		1.10	11	<0.02	<0.02	<0.05	-	11	5.4	0.07	58	100	530	5.9	
MW44	18/02/2016	3		0.12	5	0.03	<0.02	<0.05	-	5	3.3	<0.05	19	21	220	3.5	
MW45	18/02/2016	3		0.25	0.6	<0.02	<0.02	<0.05	-	0.6	1.6	<0.05	59	36	210	4.8	
MW46	18/02/2016	3		0.43	1.1	<0.02	<0.02	<0.05	-	1.1	0.36	<0.05	87	54	310	5.1	
MW47	18/02/2016	3		0.15	0.7	0.03	<0.02	<0.05	-	0.7	0.34	<0.05	61	43	310	5.1	
MW48	18/02/2016	3		0.03	0.8	<0.02	<0.02	<0.05	-	0.8	<0.05	<0.05	12	64	440	10	
MW49	18/02/2016	3		<0.01	0.6	0.02	<0.02	<0.05	-	0.6	<0.05	<0.05	27	150	750	14	
MW53	24/02/2016	3		0.04	2.8	0.02	<0.02	<0.05	-	2.8	0.53	<0.05	42	180	1000	17	
MW54	24/02/2016	3		0.04	5.5	<0.02	<0.02	<0.05	-	5.5	0.73	<0.05	55	21	140	7.9	
MW33	18/03/2016	4		5.50	5.7	<0.02	<0.02	<0.05	-	5.7	0.56	<0.05	24	5.2	32	3.4	
MW34	18/03/2016	4		0.41	2.3	<0.02	<0.02	<0.05	-	2.3	0.33	0.33	10	5.5	35	7.4	
MW35	18/03/2016	4		0.45	2.8	<0.02	<0.02	<0.05	-	2.8	0.6	0.6	9.6	5.4	23	5.2	
MW43	16/03/2016	4		1.10	4.3	<0.2	<0.2	-	3.2	4.3	0.12	0.06	60	100	510	6	
MW44	16/03/2016	4		0.19	1	<0.02	<0.02	-	0.8	1	0.14	<0.05	38	39	250	4.6	
MW46	21/03/2016	4		0.46	2.9	<0.02	<0.02	<0.05	-	2.9	0.2	<0.05	82	47	280	5.1	
MW47	22/03/2016	4		0.24	0.2	<0.02	<0.02	<0.05	-	0.2	0.15	0.05	71	48	320	5.1	
MW48	16/03/2016	4		0.04	<0.2	0.05	<0.02	-	<0.2	<0.2	<0.05	<0.05	13	65	470	9.5	
MW49	16/03/2016	4		0.03	<0.2	0.03	<0.02	-	<0.2	<0.2	<0.05	<0.05	29	150	740	15	
MW53	16/03/2016	4		0.10	<0.2	<0.02	<0.02	-	<0.2	<0.2	0.2	<0.05	41	180	970	16	
MW54	16/03/2016	4		0.06	<0.2	0.05	<0.02	-	<0.2	<0.2	0.34	<0.05	54	21	130	6.8	
MW33	14/04/2016	5		0.79	1.8	<0.02	<0.02	-	1	1.8	1.7	0.07	33	6.4	37	7.6	
MW34	14/04/2016	5		0.28	3.8	<0.02	<0.02	-	3.5	3.8	0.62	0.53	10	6	48	16	
MW35	14/04/2016	5		0.36	12	<0.02	<0.02	-	12	12	0.56	0.53	9.2	6.6	44	18	
MW43	12/04/2016	5		1.40	5.5	0.12	<0.02	0.12	-	5.6	0.5	<0.05	59	97	590	7.9	
MW44	12/04/2016	5		0.15	3.7	10	0.68	11	-	15	1.2	1.1	18	32	420	6.3	
MW45	13/04/2016	5		0.26	1.1	<0.02	<0.02	-	0.8	1.1	0.12	<0.05	63	38	240	4.4	
MW46	13/04/2016	5		0.52	1.7	<0.02	<0.02	-	1.2	1.7	0.17	<0.05	87	51	320	6.1	
MW47	13/04/2016	5		0.15	<0.2	0.31	<0.02	-	<0.2	0.3	0.2	0.06	69	45	340	4.6	
MW48	12/04/2016	5		0.07	<0.2	<0.02	<0.02	<0.05	-	<0.2	<0.05	<0.05	12	60	470	11	
MW49	12/04/2016	5		0.35	0.4	0.07	<0.02	0.07	-	0.5	<0.05	<0.05	24	120	840	16	
MW53	12/04/2016	5		0.35	0												

Table 28
Groundwater Analytical Results - Others
Nutrients and Major Cations
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPERT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients									Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW33	23/06/2016	7		0.33	1.2	<0.02	<0.02	<0.05	0.9	1.2	0.16	<0.05	25	4.9	35	2.5	
MW34	23/06/2016	7		0.16	5.7	4	0.09	4.1	5.5	9.8	2.9	1.8	11	6.4	48	11	
MW35	23/06/2016	7		0.7	4	0.04	<0.02	<0.05	3.3	4	0.64	0.22	7.9	6.4	38	10	
MW43	22/06/2016	7		1.1	5.2	0.04	<0.02	<0.05	4.1	5.2	0.22	<0.05	59	100	560	7.1	
MW44	22/06/2016	7		3.7	7.8	0.02	<0.02	<0.05	4.1	7.8	1.5	0.9	17	33	290	6.1	
MW45	22/06/2016	7		0.23	0.3	0.02	0.05	0.07	<0.2	0.4	0.19	<0.05	62	38	230	5.5	
MW46	22/06/2016	7		0.57	1.4	0.09	<0.02	0.09	0.8	1.5	0.15	<0.05	200	170	890	8.7	
MW47	22/06/2016	7		0.59	0.9	<0.02	<0.02	<0.05	0.3	0.9	0.34	0.11	46	36	320	3.4	
MW48	22/06/2016	7		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	12	64	460	10	
MW49	22/06/2016	7		<0.01	0.2	0.1	<0.02	0.1	0.2	0.3	<0.05	<0.05	20	120	710	12	
MW53	21/06/2016	7		0.78	2.3	0.54	0.04	0.58	1.5	2.9	0.25	<0.05	89	300	1900	25	
MW54	21/06/2016	7		<0.01	<0.2	0.08	<0.02	0.08	<0.2	<0.2	0.93	<0.05	68	27	150	7.1	
MW33	14/07/2016	8		0.47	1.2	<0.02	<0.02	<0.05	0.8	1.2	0.1	0.07	23	5.1	32	2.6	
MW34	14/07/2016	8		0.22	3.7	0.37	0.15	0.52	3.5	4.2	5.8	5.4	13	6.2	50	14	
MW35	14/07/2016	8		0.46	2	0.06	<0.02	0.06	1.5	2.1	0.41	0.41	8.4	6.9	38	13	
MW43	13/07/2016	8		1.2	4.7	0.07	<0.02	0.07	3.5	4.8	0.13	<0.05	56	89	490	5.3	
MW44	13/07/2016	8		1.7	3.1	0.03	<0.02	<0.05	1.4	3.1	0.67	0.64	18	27	240	4.6	
MW45	13/07/2016	8		0.24	0.5	<0.02	<0.02	<0.05	<0.2	0.5	0.14	0.08	58	33	200	4.8	
MW46	13/07/2016	8		0.48	1.6	<0.02	<0.02	<0.05	1.1	1.6	0.14	0.06	170	150	790	6.8	
MW47	13/07/2016	8		0.97	1.3	<0.02	<0.02	<0.05	0.33	1.3	0.27	0.2	43	34	280	4	
MW48	12/07/2016	8		0.1	0.2	0.03	<0.02	<0.05	0.1	0.2	0.12	<0.05	14	64	450	11	
MW49	12/07/2016	8		<0.01	<0.2	0.09	<0.02	0.09	<0.2	<0.2	<0.05	<0.05	22	120	650	11	
MW53	12/07/2016	8		0.48	1.1	0.07	<0.02	0.07	0.62	1.2	0.12	<0.05	49	190	1300	20	
MW54	12/07/2016	8		<0.01	<0.2	0.06	<0.02	0.06	<0.2	<0.2	0.26	<0.05	61	21	170	6.2	
MW33	18/08/2016	9		0.24	12	<0.02	<0.02	<0.05	12	12	0.77	0.63	47	10	83	26	
MW34	18/08/2016	9		0.12	5.9	<0.02	<0.02	<0.05	5.8	5.9	1.5	1.2	9.9	5.4	30	11	
MW35	18/08/2016	9		0.16	6.1	<0.02	<0.02	<0.05	5.9	6.1	0.52	0.26	13	6.8	37	8.8	
MW43	15/08/2016	9		1.2	5.1	0.05	<0.02	0.05	3.9	5.1	0.24	<0.05	56	95	540	7	
MW44	15/08/2016	9		0.65	1.6	0.03	<0.02	<0.05	0.9	1.6	0.24	0.16	20	29	240	3.4	
MW45	18/08/2016	9		0.2	<1	<0.02	<0.02	<0.05	<1	<0.2	0.2	0.05	60	37	240	4.6	
MW46	18/08/2016	9		0.45	<1	<0.02	<0.02	<0.05	<1	<0.2	0.23	<0.05	140	130	740	6.4	
MW47	18/08/2016	9		0.05	<1	0.08	<0.02	0.08	<1	<0.2	0.42	0.05	45	36	310	3.4	
MW48	15/08/2016	9		0.03	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.05	<0.05	13	61	470	10	
MW49	15/08/2016	9		<0.01	<0.2	0.07	<0.02	0.07	<0.2	<0.2	<0.05	<0.05	22	120	700	12	
MW53	15/08/2016	9		0.11	<2	<0.02	<0.02	<0.05	<2	<0.2	0.44	<0.05	43	190	990	22	
MW54	15/08/2016	9		<0.01	<0.2	0.04	<0.02	<0.05	<0.2	<0.2	0.31	<0.05	120	42	220	9	
MW33	27/09/2016	10		0.51	1.3	<0.02	<0.02	<0.05	0.79	1.3	0.2	0.1	24	5.4	3.2	35	
MW34	20/09/2016	10		0.39	6.6	0.06	<0.02	0.06	6.2	6.7	1.2	1.1	10	5.1	12	34	
MW35	27/09/2016	10		0.39	5.6	0.05	<0.02	<0.05	5.21	5.6	0.74	0.58	10	6.9	9.1	27	
MW43	27/09/2016	10		1.2	4.9	0.05	<0.02	0.05	3.7	4.95	0.36	<0.05	62	100	6.9	500	
MW44	21/09/2016	10		1.7	3.4	<0.02	0.03	<0.05	1.7	3.4	0.23	0.1	20	31	6.1	230	
MW45	3/10/2016	10		0.23	0.2	<0.02	<0.02	<0.05	<0.2	0.2	0.09	<0.05	65	38	4.6	220	
MW46	3/10/2016	10		0.47	1.8	<0.02	<0.02	<0.05	1.3	1.8	0.17	<0.05	200	250	7.3	1600	
MW47	3/10/2016	10		0.16	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.14	0.08	45	35	3.2	290	
MW48	20/09/2016	10		0.04	<0.2	0.02	<0.02	<0.05	<0.2	<0.2	0.14	<0.05	12	64	13	460	
MW49	28/09/2016	10		0.01	<0.2	0.08	<0.02	0.09	<0.2	<0.2	0.1	<0.05	21	120	11	730	
MW53	28/09/2016	10		0.12	<0.2	0.02	<0.02	<0.05	<0.2	<0.2	0.3	<0.05	42	190	18	1000	
MW54	28/09/2016	10		<0.01	<0.2	0.04	<0.02	0.05	<0.2	<0.2	0.67	0.16	130	43	5.8	240	
MW33	26/10/2016	11		0.35	0.9	<0.02	<0.02	<0.05	0.6	0.9	0.09	0.07	28	5.5	3	37	
MW34	26/10/2016	11		0.24	1.6	<0.02	<0.02	<0.05	1.4	1.6	1	1.6	16	7.9	16	40	
MW35	26/10/2016	11		0.27	1.2	<0.02	0.12	0.11	0.9	1.3	1.2	1.4	8.8	3	14	23	
MW43	26/10/2016	11		1.2	4.7	0.03	0.13	0.16	3.5	4.9	0.11	0.05	68	120	8.5	610	
MW44	26/10/2016	11		0.45	3.9	<0.02	<0.02	<0.05	3.5	3.9	0.55	0.15	18	30	3.4	240	
MW45	25/10/2016	11		0.26	0.4	<0.02	<0.02	<0.05	0.1	0.4	0.11	0.05	71	40	5	230	
MW46	25/10/2016	11		0.43	1.4	<0.02	<0.02	<0.05	1	1.4	0.14	0.06	150	140	7.1	820	
MW47	25/10/2016	11		0.1	0.3	<0.02	<0.02	<0.05	0.2	0.3	0.19	0.12	49	37	3.6	290	
MW48	24/10/2016	11		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.05	<0.05	13	64	11	450	
MW49	24/10/2016	11		0.03	<0.2	0.04	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	23	130	9.5	640	
MW53	24/10/2016	11		0.07	<0.2	0.03	<0.02	<0.05	<0.2	<0.2	0.17	<0.05	42	180	18	1100	
MW54	24/10/2016	11		<0.01	0.2	0.03	<0.02	<0.05	0.2	0.2	0.39	0.09	89	31	5.8	180	
MW33	24/11/2016	12		0.39	1.3	<0.02	<0.02	<0.05	0.9	1.3	0.1	0.06	24	5.1	34	2.7	
MW34	24/11/2016	12		0.34	5.2	<0.02	<0.02	<0.05	4.9	5.2	1.8	0.82	10	5.1	33	14	
MW35	24/11/2016	12		0.36	5.1	<0.02	<0.02	<0.05	4.7	5.1	1.1	0.82	5.8	2.4	21	12	
MW43	28/11/2016	12		1	6.2	<0.02	<0.02	<0.05	5.2	6.2	0.49	<0.05	63	110	620	7.1	
MW44	28/11/2016	12		0.34	1.3	0.03	<0.02	<0.05	1	1.3	0.18	0.13	13	22	220	2.1	
MW45	23/11/2016	12		0.22	0.4	<0.02	<0.02	<0.05	0.2	0.5	0.06	<0.05	61	38	220	4.6	
MW46	23/11/2016	12		0.4	1	<0.02	<0.02	<0.05	0.5	0.9	<0.05	<0.05	99	71	420	6	
MW47	23/11/2016	12		0.07	0.2	<0.02	<0.02	<0.05	0.2	0.3	0.11	0.06	48	37	300	3.4	
MW48	28/11/2016	12		0.01	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	11	65	470	10	
MW49	28/11/2016	12		0.02	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	24	140	790	13	
MW53	23/11/2016	12		0.08	<0.2	0.03	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	42	180	970	17	
MW54	23/11/2016	12		0.02	<0.2	<0.02	<0.02	<0.05	0.2	0.2	<0.05	<0.05	74	27	160	5.9	

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Sample ID	Sample Date	Sampling Round	Analyte	Nutrients								Major Cations					
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Phosphorus reactive (as P)	Calcium	Magnesium	Sodium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW33	15/12/2016	13		0.25	1	<0.02	<0.02	<0.05	0.8	1	0.2	0.05	28	5.5	35	3	
MW34	15/12/2016	13		0.24	5.1	<0.02	<0.02	<0.05	4.9	5.1	1.2	0.63	14	6.9	36	16	
MW35	14/12/2016	13		0.21	4.3	<0.02	<0.02	<0.05	4.1	4.3	1.5	0.73	5.9	2.2	14	11	
MW43	19/12/2016	13		1.1	6.3	<0.02	<0.02	<0.05	5.2	6.3	0.12	<0.05	70	120	700	9	
MW44	19/12/2016	13		0.14	2.1	0.05	<0.02	0.05	2	2.2	0.25	0.12	19	31	260	3.9	
MW45	14/12/2016	13		0.23	0.3	<0.02	<0.02	<0.05	<0.2	0.3	0.07	0.07	60	37	220	4.5	
MW46	14/12/2016	13		0.39	0.8	<0.02	<0.02	<0.05	0.4	0.8	0.05	0.05	86	55	330	5.7	
MW47	14/12/2016	13		0.12	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.08	0.09	58	40	320	3.6	
MW48	14/12/2016	13		0.04	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	12	60	450	10	
MW49	14/12/2016	13		0.02	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	25	140	770	13	
MW53	14/12/2016	13		0.11	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.06	<0.05	43	200	1100	19	
MW54	14/12/2016	13		0.04	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.07	<0.05	68	27	170	7.8	
MW33	23/01/2017	14		0.28	0.8	<0.02	0.02	<0.05	0.8	0.5	0.08	0.06	28	5.4	37	2.9	
MW34	19/01/2017	14		0.23	4.3	<0.02	0.05	<0.05	4.3	4.1	1	0.99	13	12	37	14	
MW35	23/01/2017	14		0.45	7	<0.02	0.18	<0.05	7	6.5	0.56	0.56	9.5	2.5	18	11	
MW43	19/01/2017	14		0.98	6.2	<0.02	<0.02	<0.05	6.2	5.2	<0.05	<0.05	68	120	610	7.9	
MW44	19/01/2017	14		0.32	1.6	<0.02	0.03	<0.05	1.6	1.3	0.23	0.13	20	34	270	3.6	
MW45	19/01/2017	14		0.42	1.3	<0.02	<0.02	<0.05	1.3	0.9	0.5	0.06	74	43	250	4.8	
MW46	18/01/2017	14		0.37	0.8	<0.02	<0.02	<0.05	0.8	0.4	0.06	<0.05	84	63	660	10	
MW47	18/01/2017	14		0.1	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.16	0.07	48	39	430	7.3	
MW48	18/01/2017	14		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	20	63	550	14	
MW49	18/01/2017	14		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.08	<0.05	27	150	900	18	
MW53	18/01/2017	14		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.13	<0.05	60	27	270	12	
MW54	18/01/2017	14		0.02	<0.5	<0.02	<0.02	<0.05	<0.5	<0.5	0.45	<0.05	67	25	140	8.1	
MW33	17/02/2017	15		0.33	0.8	<0.02	<0.02	<0.05	0.8	0.5	<0.05	<0.05	25	5.1	31	2.7	
MW34	16/02/2017	15		0.04	5.1	<0.02	<0.02	<0.05	5.1	5.1	2.3	1.4	12	11	32	5.2	
MW35	17/02/2017	15		0.08	5	<0.02	<0.02	<0.05	5	4.9	0.26	0.25	9.8	3.2	16	11	
MW43	17/02/2017	15		1.1	6	<0.02	<0.02	<0.05	6	4.9	<0.05	<0.05	58	98	500	7	
MW44	17/02/2017	15		0.53	5.9	4	0.93	5	11	5.4	1.3	1.3	13	14	140	7.6	
MW45	16/02/2017	15		0.2	0.7	<0.02	<0.02	<0.05	0.74	0.54	0.15	<0.05	83	32	230	4.1	
MW46	16/02/2017	15		0.44	1.2	<0.02	<0.02	<0.05	1.2	0.76	0.15	<0.05	96	56	380	6	
MW47	16/02/2017	15		0.22	1	2.1	0.59	2.7	3.7	0.78	0.14	0.09	68	37	380	3.9	
MW48	21/02/2017	15		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	13	64	440	9.6	
MW49	21/02/2017	15		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	27	140	720	13	
MW53	20/02/2017	15		1.1	6	<0.02	<0.02	<0.05	6	4.9	0.7	<0.05	61	220	1100	22	
MW54	21/02/2017	15		0.06	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.17	<0.05	74	27	160	6.4	
MW33	15/03/2017	16		0.34	0.8	<0.02	<0.02	<0.05	0.82	0.5	0.1	<0.05	26	5.4	37	2.9	
MW34	15/03/2017	16		0.04	3.3	<0.02	<0.02	<0.05	3.3	3.3	1.5	1.5	25	11	41	16	
MW35	15/03/2017	16		0.24	2.6	<0.02	<0.02	<0.05	2.6	2.3	0.71	0.65	9.4	2.8	19	12	
MW43	15/03/2017	16		0.87	3.9	<0.02	<0.02	<0.05	3.9	3	0.25	<0.05	78	130	670	9.2	
MW44	15/03/2017	16		0.3	1.4	<0.02	<0.02	<0.05	1.4	1.1	0.61	0.59	22	31	240	6.1	
MW45	15/03/2017	16		0.19	0.4	<0.02	<0.02	<0.05	0.42	0.2	0.13	<0.05	67	39	240	5.1	
MW46	14/03/2017	16		0.58	0.8	<0.02	<0.02	<0.05	0.84	0.26	0.09	<0.05	92	58	360	6	
MW47	14/03/2017	16		0.12	0.3	<0.02	<0.02	<0.05	0.28	<0.2	0.14	0.08	46	37	290	3	
MW48	14/03/2017	16		0.02	0.3	<0.02	<0.02	<0.05	0.3	0.3	0.14	<0.05	14	70	520	13	
MW49	14/03/2017	16		0.04	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	<0.05	<0.05	31	160	900	18	
MW53	14/03/2017	16		0.35	0.7	<0.02	<0.02	<0.05	0.7	0.3	0.29	<0.05	46	210	1200	22	
MW54	14/03/2017	16		0.05	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.21	<0.05	83	30	180	8.1	
MW33	13/04/2017	17		0.33	1	<0.02	<0.02	<0.05	1	0.7	0.13	0.07	24	5.6	32	2.8	
MW34	13/04/2017	17		0.18	4.3	<0.02	<0.02	<0.05	4.3	4.1	1.4	1.2	24	7.2	25	10	
MW35	13/04/2017	17		0.29	4.7	<0.02	<0.02	<0.05	4.7	4.4	0.7	0.66	8.4	2.4	15	10	
MW43	18/04/2017	17		1.4	5.1	<0.02	<0.02	<0.05	5.1	3.7	0.37	0.06	66	110	560	8.2	
MW44	18/04/2017	17		0.44	1.8	<0.02	<0.02	<0.05	1.8	-	0.23	0.29	16	26	210	6.6	
MW45	10/04/2017	17		0.36	0.4	<0.02	<0.02	<0.05	0.4	<0.2	0.14	0.06	65	38	210	3.6	
MW46	10/04/2017	17		0.37	0.7	<0.02	<0.02	<0.05	0.7	0.3	0.11	<0.05	89	53	310	5.1	
MW47	10/04/2017	17		0.11	0.2	<0.02	<0.02	<0.05	0.2	<0.2	0.17	0.09	59	41	300	3.2	
MW48	10/04/2017	17		0.02	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.06	<0.05	12	63	430	8.7	
MW49	10/04/2017	17		0.04	<0.2	0.04	<0.02	<0.05	<0.2	<0.2	0.09	<0.05	28	150	770	14	
MW53	10/04/2017	17		0.09	<0.2	0.03	<0.02	<0.05	<0.2	<0.2	0.14	<0.05	44	200	980	17	
MW54	10/04/2017	17		0.06	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.17	<0.05	73	27	160	7.3	

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Table 29
Groundwater Analytical Results - Others
TPH and BTEX
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	BTEX							Total Petroleum Hydrocarbon												
				Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (Sum of total)	C10-C16	C16-C34	C34-C40	C6 - C10	C6-C10 less BTEX (F1)		
			Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			LOR	1	1	1	2	1	3	5	50	20	50	100	100	100	50	100	100	200	200	200	200
			1. ANZECC FW 95%	950	NE	NE	NE	NE	350	NE	16	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW33	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW34	3/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW35	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW43	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW44	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW45	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW47	5/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW48	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW49	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW52	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW53	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW54	4/05/2016	6		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	
MW3	27/06/2016	7		<1	<1	<1	<2	<1	<3	<10	<50	<20	<50	<100	<100	<100	<50	<100	<100	<20	<20	<20	

Notes:

NE = Not Established
µg/L = micrograms per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW= Monitoring well

Investigation Levels:

1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Table 30
Groundwater Analytical Results
ASS and General Parameters RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters						
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride
			Units	pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	10	1	10	20	10	20	10	5	1
			ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			DER 2015	Lower - 6.5 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE
GW05	15/12/2015	1		7.0	160	190	12	36	-	36	<10	6.9	24
QC3	15/12/2015	1	Duplicate of GW05	7.0	150	200	14	38	-	38	<10	6.3	25
			RPD %	0	6	5	15	5	#	5	#	9	4
QC4	15/12/2015	1	Triplicate of GW05	6.6	212	-	14	34	<1	34	<1	-	26
			RPD %	6	28	#	15	6	#	6	#	#	8
GW5	18/12/2015	1		7.7	460	700	<10	100	-	100	<10	44	82
QC12	18/12/2015	1	Duplicate of GW5	7.8	440	670	<10	110	-	110	<10	44	81
			RPD %	1	4	4	#	10	#	10	#	0	1
QC13	18/12/2015	1	Triplicate of GW5	6.8	506	-	44	87	<1	87	<1	-	75
			RPD %	12	10	#	#	14	#	14	#	#	9
MW45	3/02/2016	2		8.5	990	1800	<10	220	<10	200	13	8.6	470
QC28	3/02/2016	2	Duplicate of MW45	8.5	1000	1800	<10	210	<10	200	13	9.1	470
			RPD %	0	1	0	#	5	#	0	0	6	0
MW47	3/02/2016	2		8.4	1200	2100	<10	220	<10	210	<10	12	560
QC29	3/02/2016	2	Duplicate of MW47	8.07	2330	2140	<1	306	<1	306	<1	-	587
			RPD %	4	64	2	#	33	#	37	#	#	5
MW45	18/02/2016	3		8.4	1100	1900	<10	-	<10	210	18	11	470
QC46	18/02/2016	3	Duplicate of MW45	7.61	1320	1770	9	202	<10	202	<1	-	480
			RPD %	10	18	7	57	-	#	4	67	-	2
MW47	18/02/2016	3		8.2	1400	2500	<10	-	<10	210	<10	14	660
QC47	18/02/2016	3	Duplicate of MW47	8.07	2900	2270	7	308	<10	308	<1	-	630
			RPD %	2	70	10	33	-	#	38	#	-	5
MW45	22/03/2016	4		8.2	1000	1800	<10	210	<10	210	<10	8.1	450
QC79	22/03/2016	4	Duplicate of MW45	7.65	1280	1700	-	196	<1	196	<1	-	494
			RPD %	7	25	6	-	7	#	7	#	-	9
MW47	22/03/2016	4		8.2	1300	2400	<10	220	<10	220	<10	12	610
QC80	22/03/2016	4	Duplicate of MW47	8	1970	2250	-	198	<1	198	<1	-	706
			RPD %	2	41	6	-	11	#	11	#	-	15
MW45	13/04/2016	5		8.1	1000	1700	<10	-	<10	250	<10	13	480
QC91	13/04/2016	5	Duplicate of MW45	7.88	1200	1920	-	205	<1	205	<1	-	514
			RPD %	3	18	12	-	-	#	20	#	-	7
MW47	13/04/2016	5		8.4	1400	2400	<10	220	<10	240	<10	12	650
QC90	13/04/2016	5	Duplicate of MW47	8.14	2520	2520	-	192	<1	192	<1	-	727
			RPD %	3	57	5	-	-	#	22	#	-	11
MW45	6/05/2016	6		7.8	950	1400	<10	240	<10	240	<10	11	350
QC91	6/05/2016	6	Duplicate of MW45	7.53	1180	1630	-	177	<1	177	<1	-	422
			RPD %	4	22	15	-	30	#	30	#	-	19
MW47	5/05/2016	6		8.1	1500	2100	<10	250	<10	250	<10	15	540
QC90	5/05/2016	6	Duplicate of MW47	7.91	1740	2440	-	186	<1	186	<1	-	672
			RPD %	2	15	15	-	29	#	29	#	-	22
MW47	22/06/2016	7		8	1300	2200	57	250	<10	250	<10	16	530
QC125	22/06/2016	7	Duplicate of MW47	7.99	1860	2160	9	216	<1	216	<1	-	560
			RPD %	0	35	2	-	15	#	15	#	-	6
MW45	13/07/2016	8		7.8	1000	1800	<10	210	<1	210	<10	6.7	390
QC146	13/07/2016	8	Duplicate of MW46	7.68	997	1750	11	217	<1	217	<1	-	482
			RPD %	2	0	3	75	3	#	3	#	-	21
MW47	13/07/2016	8		8	1200	2200	<10	250	<1	250	<10	11	480
QC145	13/07/2016	8	Duplicate of MW50	7.87	1610	2120	5	208	<1	208	<1	-	569
			RPD %	2	29	4	0	18	#	18	#	-	17
MW45	18/08/2016	9		7.4	3100	5600	29	330	<10	330	<10	55	1600
QC166	18/08/2016	9	Duplicate of MW45	7.67	1070	1780	11	179	<1	179	<1	-	507
			RPD %	4	97	104	75	59	#	59	#	-	104
MW47	18/08/2016	9		6.1	5100	9200	79	35	<10	35	<10	60	2700
QC165	18/08/2016	9	Duplicate of MW47	7.97	1540	2060	4	199	<10	199	<1	-	540
			RPD %	27	107	127	22	140	#	140	#	-	133
MW45	3/10/2016	10		8.2	1000	1700	<10	220	<10	220	<10	<5	440
QC202	3/10/2016	10	Duplicate of MW46	7.29	-	-	34	410	<1	410	<1	-	3300
			RPD %	12	#	#	149	60	#	60	#	-	153
MW47	3/10/2016	10		8.3	1200	1900	<10	250	<10	240	<10	8.5	460
QC206	3/10/2016	10	Duplicate of MW50	7.99	-	-	4	221	<1	221	<1	-	556
			RPD %	4	#	#	22	12	#	8	#	-	19
MW45	18/08/2016	11		7.7	960	1700	<10	230	<10	230	<10	<5	460
QC220	18/08/2016	11	Duplicate of MW45	8	980	1500	<10	210	<10	210	<10	<5	460
			RPD %	4	2	13	#	9	#	9	#	#	0
MW47	25/10/2016	11		8.1	860	1600	<10	190	<10	190	<10	10	440
QC219	25/10/2016	11	Duplicate of MW47	8	1000	1600	<10	170	<10	170	<10	10	450
			RPD %	1	15	0	#	11	#	11	#	0	2

Notes:
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 - = sample not analysed
 IL = Investigation level
 MW = Monitoring well
 µS/cm = Microsiemens per centimeter

Investigation Levels:
 1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed laboratory LOR

Sample ID	Sample Date	Sampling Round	Analyte	General Parameters			Acid Sulfate Parameters						
				pH (Lab)	TDS	Electrical conductivity *(lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride
			Units	pH_Units	mg/L	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	10	1	10	20	10	20	10	5	1
			ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			DER 2015	Lower - 6.5 Upper - 8.5	NE	NE	>40	Lower - 60 Upper - >180	NE	NE	NE	NE	NE
MW45	23/11/2016	12		7.7	1000	1800	<10	230	<10	230	<10	6.6	470
QC247	23/11/2016	12	Duplicate of MW45	7.82	1070	1790	15	201	<10	201	<1	-	466
			RPD %	2	7	1	100	13	#	13	#	-	1
MW47	23/11/2016	12		7.9	1300	2000	<10	210	<10	210	<10	11	520
QC246	23/11/2016	12	Duplicate of MW47	7.92	1560	2020	9	197	<10	197	<1	-	546
			RPD %	0	18	1	57	6	#	6	#	-	5
MW45	14/12/2016	13		7.9	1900	1700	<10	240	<10	240	<10	21	460
QC265	14/12/2016	13	Duplicate of MW45	7.85	1110	-	13	212	<1	212	<1	16	484
			RPD %	1	52	-	89	12	#	12	#	27	5
MW47	14/12/2016	13		7.9	1200	2100	<10	220	<10	220	<10	37	540
QC264	14/12/2016	13	Duplicate of MW47	8.01	1870	-	9	206	<1	206	<1	41	637
			RPD %	1	44	-	57	7	#	7	#	10	16
MW45	18/01/2017	14		7.7	1000	1800	<10	240	<10	240	<10	21	450
QC288	18/01/2017	14	Duplicate of MW45	7.8	2100	1800	<10	240	<10	240	<10	21	460
			RPD %	1	71	0	#	0	#	0	#	0	2
MW47	18/01/2017	14		7.8	1300	2100	<10	230	<10	230	<10	34	510
QC287	18/01/2017	14	Duplicate of MW47	7.96	1590	2130	5	200	<1	200	<1	30	622
			RPD %	2	20	1	0	14	#	14	#	13	20
MW45	18/01/2017	15		7.8	1000	1700	<10	230	<10	230	<10	25	480
QC311	18/01/2017	15	Duplicate of MW45	7.67	951	1760	16	201	<1	201	<1	17	487
			RPD %	2	5	3	105	13	#	13	#	38	1
MW47	18/01/2017	15		8.1	1600	2600	<10	290	<10	290	<10	120	570
QC310	18/01/2017	15	Duplicate of MW47	7.97	1280	2420	7	254	<1	254	<1	103	640
			RPD %	2	22	7	33	13	#	13	#	15	12
MW45	15/03/2017	16		7.9	1100	1800	13	230	<10	230	<10	25	450
QC335	15/03/2017	16	Duplicate of MW45	7.80	1000	1800	13	210	<10	210	<10	23	430
			RPD %	1	10	0	0	9	#	9	#	8	5
MW47	15/03/2017	16		7.9	1100	2000	<10	220	<10	220	<10	37	470
QC334	15/03/2017	16	Duplicate of MW47	7.80	1100	2100	<10	210	<10	210	<10	29	450
			RPD %	1	0	5	#	5	#	5	#	24	4
MW45	10/04/2017	17		7.8	1100	2000	<10	220	<10	220	<10	9.2	460
QC348	10/04/2017	17	Duplicate of MW45	7.78	1120	1630	12	194	<1	194	<1	13	487
			RPD %	0	2	20	82	13	#	13	#	34	6
MW47	10/04/2017	17		7.9	1100	2200	<10	210	<10	210	<10	27	470
QC347	10/04/2017	17	Duplicate of MW47	7.85	1230	1840	6	184	<1	184	<1	25	582
			RPD %	1	11	18	18	13	#	13	#	8	21

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Table 31
Groundwater Analytical Results
Total and Dissolved Metals RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR				0.05	0.001	0.0002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
ANZECC FW 95%				0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	
DER 2015				1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1	NE	NE	NE	NE	1	NE	NE	NE	NE	NE		
MW47	18/08/2016	9		8.2	0.008	<0.00005	0.021	0.004	8.8	0.015	0.024	<0.0001	0.014	0.004	0.028	<0.05	0.001	<0.00005	<0.001	<0.001	<0.025	<0.001	<0.005	<0.0001	0.002	0.001	0.002
QC165	18/08/2016	9	Duplicate of MW47	14.6	0.0057	<0.00005	0.0276	0.0048	9.18	0.009	0.0284	<0.00004	0.0098	0.0019	0.058	0.012	0.0006	<0.00005	0.0003	<0.0005	0.128	<0.0001	0.0183	<0.00004	<0.0005	0.0002	0.001
RPD %				56	34	#	27	18	4	50	17	#	35	71	70	70	50	#	50	#	135	#	#	#	133	67	
MW45	3/10/2016	10		0.1	<0.001	<0.00005	<0.001	<0.001	0.11	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC202	3/10/2016	10	Duplicate of MW45	4.03	0.003	0.00005	0.01	0.0064	7.03	0.0053	0.0551	<0.0001	0.0065	0.003	0.314	0.011	0.0006	<0.00005	0.001	<0.0005	0.134	<0.0001	0.0377	<0.0001	0.0006	0.0004	0.01
RPD %				190	143	67	181	171	194	166	183	#	171	143	197	78	18	#	67	#	137	#	175	#	18	22	120
MW47	3/10/2016	10		1.3	0.002	<0.00005	0.004	<0.001	1.1	0.003	0.014	<0.0001	0.003	0.003	0.01	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.003	0.002	<0.005
QC206	3/10/2016	10	Duplicate of MW47	23.1	0.0198	0.00008	0.0434	0.0061	12.7	0.0245	0.0258	<0.0001	0.0273	0.0054	0.058	0.01	0.0007	<0.00005	0.0003	<0.0005	0.099	<0.0001	0.0128	<0.0001	<0.0005	<0.0002	<0.001
RPD %				179	163	105	166	170	168	156	59	#	160	57	141	86	35	#	50	#	119	#	135	#	169	67	#
MW45	18/08/2016	11		0.34	<0.001	<0.00005	<0.001	<0.001	0.72	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005
QC220	18/08/2016	11	Duplicate of MW45	0.51	0.001	<0.00005	0.001	<0.001	1.5	<0.001	<0.005	<0.0001	0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
RPD %				40	67	#	67	#	70	#	#	#	0	#	82	#	#	#	#	#	#	#	#	#	67	#	#
MW47	25/10/2016	11		4	0.004	<0.00005	0.011	<0.001	3	0.007	0.014	<0.0001	0.006	0.003	0.022	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
QC219	25/10/2016	11	Duplicate of MW47	1.9	0.002	<0.00005	0.008	<0.001	1.1	0.003	0.01	<0.0001	0.003	0.002	0.018	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
RPD %				71	67	#	32	#	93	80	33	#	67	40	20	#	0	#	#	#	#	#	#	#	0	#	#
MW45	23/11/2016	12		0.72	0.002	<0.00005	0.002	<0.001	1.6	0.001	<0.005	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC247	23/11/2016	12	Duplicate of MW45	1.57	0.0009	<0.00005	0.002	<0.0005	0.911	0.0007	0.0037	<0.00004	0.0007	0.0002	0.002	0.007	<0.0002	<0.00005	0.0002	<0.0005	0.012	<0.0001	0.0031	<0.00004	<0.0005	<0.0002	<0.001
RPD %				74	76	#	0	#	55	35	39	#	35	86	22	113	#	#	86	#	70	#	21	#	3	#	#
MW47	23/11/2016	12		1.6	0.002	<0.00005	0.005	<0.001	1.1	0.004	0.016	<0.0001	0.003	0.002	0.01	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.013	<0.001	<0.005
QC246	23/11/2016	12	Duplicate of MW47	4.14	0.0015	<0.00005	0.0077	0.0008	1.76	0.0025	0.0144	<0.00004	0.0019	0.0006	0.005	0.013	0.0004	<0.00005	0.0002	<0.0005	0.055	<0.0001	0.0116	<0.00004	<0.0005	<0.0002	<0.001
RPD %				89	29	#	43	46	46	46	11	#	45	108	67	63	22	#	86	#	75	#	11	#	#	#	#
MW45	14/12/2016	13		0.68	<0.001	<0.00005	0.001	<0.001	0.37	<0.001	<0.005	<0.0001	<0.001	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC265	14/12/2016	13	Duplicate of MW45	6.72	0.021	<0.00005	0.011	0.003	38.5	0.0129	0.0066	<0.00004	0.0176	0.0029	0.011	0.018	0.0003	<0.00005	<0.0002	<0.0005	0.014	<0.0001	0.0033	<0.00004	<0.0005	<0.0002	0.002
RPD %				163	191	#	167	143	196	185	90	#	189	141	59	33	50	#	#	#	56	#	28	#	#	#	22
MW47	14/12/2016	13		0.54	<0.001	<0.00005	0.001	<0.001	0.18	<0.001	0.019	<0.0001	<0.001	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.009	<0.0001	<0.001	<0.001	<0.005
QC264	14/12/2016	13	Duplicate of MW47	28.4	0.0161	0.00012	0.0541	0.0078	10.8	0.0307	0.0311	0.00006	0.0274	0.0058	0.042	0.022	0.0005	<0.00005	0.0003	<0.0005	0.141	<0.0001	0.0173	<0.00004	<0.0005	<0.0002	<0.001
RPD %				193	188	131	193	176	193	194	48	18	193	168	178	13	0	#	50	#	140	#	63	#	#	#	#
MW45	18/01/2017	14		0.68	0.002	<0.00005	0.001	<0.001	1.8	0.001	<0.005	<0.0001	0.002	<0.001	<0.005	<0.05	0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
QC288	18/01/2017	14	Duplicate of MW45	0.4	0.001	<0.00005	<0.001	<0.001	0.5	<0.001	<0.005	<0.0001	0.002	0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.001	<0.001	<0.005
RPD %				52	67	#	67	#	113	67	#	#	0	67	#	#	67	#	#	#	#	#	#	#	67	#	#
MW47	18/01/2017	14		3.3	0.004	<0.00005	0.009	<0.001	2.8	0.006	0.011	<0.0001	0.005	0.005	0.016	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC287	18/01/2017	14	Duplicate of MW47	11.2	0.0071	0.00005	0.0232	0.0029	7.22	0.0112	0.0222	0.00006	0.0117	0.0026	0.017	0.028	0.0004	<0.00005	0.0004	<0.0005	0.124	<0.0001	0.0149	<0.00004	<0.0005	<0.0002	<0.001
RPD %				109	56	#	88	141	88	60	67	18	80	63	6	11	22	#	22	#	133	#	143	#	#	#	#
MW45	18/01/2017	15		1.5	0.003	<0.00005	0.003	<0.001	2.5	0.002	<0.005	<0.0001	0.003	0.002	0.02	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	<0.001	<0.001	<0.005
QC311	18/01/2017	15	Duplicate of MW45	6.07	0.0088	<0.00005	0.0097	0.0016	12.5	0.0059	0.0061	<0.00004	0.0082	0.0014	0.027	0.007	0.0003	<0.00005	0.0007	<0.0005	0.024	<0.0001	0.0042	<0.00004	<0.0005	0.0002	<0.001
RPD %				121	98	#	106	105	133	99	84	#	93	35	30	113	50	#	33	#	4	#	51	#	#	86	#
MW47	18/01/2017	15		1.1	0.003	<0.00005	0.003	0.001	0.79	0.002	0.014	<0.0001	0.003	0.004	0.029	<0.05	0.003	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.003	0.003	<0.005
QC310	1																										

Table 32
Groundwater Analytical Results
Nutrients Cations and Anions RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients								Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.01	0.5	0.5	0.5	
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
GW05	15/12/2015	1		0.07	1	0.18	0.05	0.23	-	1.2	0.36	-	17	4.4	1.3	
QC3	15/12/2015	1	Duplicate of GW05	0.07	1	0.17	0.05	0.21	-	1.2	0.37	-	17	4.5	1.3	
			RPD %	0	0	6	0	9	-	0	3	#	0	2	0	
QC4	15/12/2015	1	Triplicate of GW05	0.06	0.9	0.16	<0.01	-	-	1.1	-	0.22	-	-	-	
			RPD %	15	11	12	164	#	-	9	#	#	#	#	#	
GW5	18/12/2015	1		0.14	<0.2	1.5	0.07	1.5	-	1.5	<0.05	-	50	9.3	13	
QC12	18/12/2015	1	Duplicate of GW5	0.15	<0.2	1.5	0.08	1.6	-	1.5	<0.05	-	50	9.4	13	
			RPD %	7	#	0	13	6	-	0	#	#	0	1	0	
QC13	18/12/2015	1	Triplicate of GW5	0.1	1.5	1.51	0.05	-	-	3.1	-	<0.01	-	-	-	
			RPD %	33	175	1	33	#	-	70	#	#	#	#	#	
MW45	3/02/2016	2		0.24	1.6	<0.02	<0.02	<0.05	-	1.6	0.14	0.07	65	35	4.5	
QC28	3/02/2016	2	Duplicate of MW45	0.22	2.3	<0.02	<0.02	<0.05	-	2.3	0.23	<0.05	68	36	4.3	
			RPD %	9	36	#	#	#	-	36	49	95	5	3	5	
MW46	3/02/2016	2		0.47	2.2	<0.02	<0.02	<0.05	-	2.2	0.16	<0.05	110	63	5.6	
QC35	3/02/2016	2	Duplicate of MW46	0.44	2.2	<0.02	<0.02	<0.05	-	2.2	0.14	<0.05	100	62	6	
			RPD %	7	0	#	#	#	-	0	13	#	10	2	7	
MW47	3/02/2016	2		0.1	<0.2	<0.02	<0.02	<0.05	-	<0.2	0.28	0.06	66	39	4.9	
QC29	3/02/2016	2	Duplicate of MW47	0.16	4.2	<0.01	<0.01	-	-	4.2	-	0.07	-	-	-	
			RPD %	46	191	#	#	#	-	191	#	15	#	#	#	
MW45	18/02/2016	3		0.25	0.6	<0.02	<0.02	<0.05	-	0.6	1.6	<0.05	59	36	4.8	
QC46	18/02/2016	3	Duplicate of MW45	0.28	0.9	0.01	<0.01	-	-	0.9	-	0.08	-	-	-	
			RPD %	11	40	0	#	-	-	40	-	105	-	-	-	
MW46	18/02/2016	3		0.43	1.1	<0.02	<0.02	<0.05	-	1.1	0.36	<0.05	87	54	5.1	
QC48	18/02/2016	3	Duplicate of MW46	0.47	1.4	0.01	<0.01	-	-	1.4	-	0.02	-	-	-	
			RPD %	9	24	0	#	-	-	24	-	22	-	-	-	
MW47	18/02/2016	3		0.15	0.7	0.03	<0.02	<0.05	-	0.7	0.34	<0.05	61	43	5.1	
QC47	18/02/2016	3	Duplicate of MW47	0.18	1.9	0.01	0.01	-	-	1.9	-	0.07	-	-	-	
			RPD %	18	92	100	0	-	-	92	-	95	-	-	-	
MW45	22/03/2016	4		0.46	0.5	<0.02	<0.02	<0.05	-	0.5	0.13	<0.05	59	36	5	
QC79	22/03/2016	4	Duplicate of MW45	0.23	0.5	0.01	<0.01	-	-	0.5	-	0.07	-	-	-	
			RPD %	67	0	0	#	-	-	0	-	95	-	-	-	
MW46	21/03/2016	4		0.46	2.9	<0.02	<0.02	<0.05	-	2.9	0.2	<0.05	82	47	5.1	
QC76	21/03/2016	4	Duplicate of MW46	0.46	0.9	<0.02	<0.02	<0.05	-	0.9	0.23	<0.05	81	47	5.1	
			RPD %	0	105	#	#	#	-	105	14	#	1	0	0	
MW47	22/03/2016	4		0.24	0.2	<0.02	<0.02	<0.05	-	0.2	0.15	0.05	71	48	5.1	
QC80	22/03/2016	4	Duplicate of MW47	0.18	0.7	0.02	<0.01	-	-	0.7	-	0.06	-	-	-	
			RPD %	29	111	67	#	-	-	111	-	18	-	-	-	
MW45	13/04/2016	5		0.26	1.1	<0.02	<0.02	-	0.8	1.1	0.12	<0.05	63	38	4.4	
QC91	13/04/2016	5	Duplicate of MW45	0.26	0.6	0.01	0.03	-	-	0.6	-	0.07	-	-	-	
			RPD %	0	59	0	100	-	-	59	-	95	-	-	-	
MW46	13/04/2016	5		0.52	1.7	<0.02	<0.02	-	1.2	1.7	0.17	<0.05	87	51	6.1	
QC89	13/04/2016	5	Duplicate of MW46	0.48	1.3	<0.01	<0.01	-	-	1.3	-	0.05	-	-	-	
			RPD %	8	27	#	#	-	-	27	-	67	-	-	-	
MW47	13/04/2016	5		0.15	<0.2	0.31	<0.02	-	<0.2	0.3	0.2	0.06	69	45	4.6	
QC90	13/04/2016	5	Duplicate of MW47	0.19	1.1	<0.01	<0.01	-	-	1.1	-	0.06	-	-	-	
			RPD %	24	167	194	#	-	-	114	-	0	-	-	-	
MW45	6/05/2016	6		0.17	0.8	<0.02	<0.02	<0.05	0.6	0.8	0.2	<0.05	47	28	4.3	
QC91	6/05/2016	6	Duplicate of MW45	0.25	1.4	0.01	<0.01	-	-	1.4	-	0.11	-	-	-	
			RPD %	38	55	0	#	-	-	55	-	126	-	-	-	
MW46	5/05/2016	6		0.38	0.6	<0.02	<0.02	<0.05	0.2	0.6	<0.05	<0.05	73	43	6.1	
QC89	5/05/2016	6	Duplicate of MW46	0.55	2	0.02	<0.01	-	-	2	-	0.07	-	-	-	
			RPD %	37	108	67	#	-	-	108	-	95	-	-	-	
MW47	5/05/2016	6		0.06	0.4	0.03	<0.02	<0.05	0.3	0.4	0.22	0.11	53	36	4.4	
QC90	5/05/2016	6	Duplicate of MW47	0.2	0.8	0.26	<0.01	-	-	1.1	-	0.09	-	-	-	
			RPD %	108	67	159	#	-	-	93	-	20	-	-	-	
MW46	22/06/2016	7		0.57	1.4	0.09	<0.02	0.09	0.8	1.5	0.15	<0.05	200	170	8.7	
QC126	22/06/2016	7	Duplicate of MW46	0.64	2.1	<0.01	<0.01	-	-	2.1	-	0.07	-	-	-	
			RPD %	12	40	179	#	-	-	33	-	95	-	-	-	
MW47	22/06/2016	7		0.59	0.9	<0.02	<0.02	<0.05	0.3	0.9	0.34	0.11	46	36	3.4	
QC125	22/06/2016	7	Duplicate of MW47	0.49	2.1	<0.01	<0.01	-	-	2.1	-	0.15	-	-	-	
			RPD %	19	80	#	#	-	-	80	-	31	-	-	-	
MW45	13/07/2016	8		0.24	0.5	<0.02	<0.02	<0.05	<0.2	0.5	0.14	0.08	58	33	4.8	
QC146	13/07/2016	8	Duplicate of MW45	0.28	0.8	0.03	<0.01	-	-	0.8	-	0.08	-	-	-	
			RPD %	15	46	100	#	-	-	46	-	0	-	-	-	
MW46	13/07/2016	8		0.48	1.6	<0.02	<0.02	<0.05	1.1	1.6	0.14	0.06	170	150	6.8	
QC144	13/07/2016	8	Duplicate of MW46	0.62	2	0.06	<0.01	-	-	2.1	-	0.07	-	-	-	
			RPD %	25	22	143	#	-	-	27	-	15	-	-	-	
MW47	13/07/2016	8		0.97	1.3	<0.02	<0.02	<0.05	0.33	1.3	0.27	0.2	43	34	4	
QC145	13/07/2016	8	Duplicate of MW47	0.69	1.2	<0.01	<0.01	-	-	1.2	-	0.16	-	-	-	
			RPD %	34	8	#	#	-	-	8	-	22	-	-	-	
MW46	18/08/2016	9		0.45	<1	<0.02	<0.02	<0.05	<1	<0.2	0.23	<0.05	140	130	6.4	
QC164	18/08/2016	9	Duplicate of MW46	0.57	1.2	<0.01	<0.01	-	-	1.2	-	0.06	-	-	-	
			RPD %	24	82	#	#	#	#	169	#	82	#	#	#	
MW47	18/08/2016	9		0.05	<1	0.08	<0.02	0.08	<1	<0.2	0.42	0.05	45	36	3.4	
QC165	18/08/2016	9	Duplicate of MW47	0.11	0.9	0.04	<0.01	-	-	0.9	-	0.05	-	-	-	
			RPD %	75	57	67	#	#	#	160	#	0	#	#	#	
MW45	3/10/2016	10		0.23	0.2	<0.02	<0.02	<0.05	<0.2	0.2	0.09	<0.05	65	38	4.6	
QC202	3/10/2016	10	Duplicate of MW45													

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients								Major Cations				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Organic)	Nitrogen (Total)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.01	0.5	0.5	0.5	
			1. ANZECC FW 95%	0.90	NE	0.7	NE	0.1	NE	1.5	0.06	0.03	NE	NE	NE	
			2. DER 2015	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
MW45	18/08/2016	11		0.26	0.4	<0.02	<0.02	<0.05	0.1	0.4	0.11	0.05	71	40	230	
QC220	18/08/2016	11	Duplicate of MW45	0.23	0.4	<0.02	<0.02	<0.05	0.2	0.4	0.11	0.09	48	35	3.4	
			RPD %	12	0	#	#	#	67	0	0	57	39	13	194	
MW46	25/10/2016	11		0.43	1.4	<0.02	<0.02	<0.05	1	1.4	0.14	0.06	150	140	820	
QC218	25/10/2016	11	Duplicate of MW46	0.43	1.2	<0.02	<0.02	<0.05	0.8	1.2	0.14	0.1	150	130	6.9	
			RPD %	0	15	#	#	#	22	15	0	50	0	7	197	
MW47	25/10/2016	11		0.1	0.3	<0.02	<0.02	<0.05	0.2	0.3	0.19	0.12	49	37	290	
QC219	25/10/2016	11	Duplicate of MW47	0.09	0.3	<0.02	<0.02	<0.05	0.2	0.3	0.17	0.12	47	35	3.3	
			RPD %	11	0	#	#	#	0	0	11	0	4	6	195	
MW45	23/11/2016	12		0.22	0.4	<0.02	<0.02	<0.05	0.2	0.5	0.06	<0.05	61	38	4.6	
QC247	23/11/2016	12	Duplicate of MW45	0.26	0.6	<0.01	<0.01	-	-	0.6	0.08	0.08	65	39	6	
			RPD %	17	40	#	#	-	-	18	29	105	6	3	26	
MW46	23/11/2016	12		0.4	1	<0.02	<0.02	<0.05	0.5	0.9	<0.05	<0.05	99	71	6	
QC245	23/11/2016	12	Duplicate of MW46	0.44	1	<0.01	<0.01	-	-	1	0.09	0.06	102	76	7	
			RPD %	10	0	#	#	-	-	11	113	82	3	7	15	
MW47	23/11/2016	12		0.07	0.2	<0.02	<0.02	<0.05	0.2	0.3	0.11	0.06	48	37	3.4	
QC246	23/11/2016	12	Duplicate of MW47	0.13	0.5	<0.01	<0.01	-	-	0.5	0.19	0.1	52	38	4	
			RPD %	60	86	#	#	-	-	50	53	50	8	3	16	
MW45	14/12/2016	13		0.23	0.3	<0.02	<0.02	<0.05	<0.2	0.3	0.07	0.07	60	37	4.5	
QC265	14/12/2016	13	Duplicate of MW45	0.26	0.4	<0.01	<0.01	-	-	0.4	-	0.08	65	40	6	
			RPD %	12	29	#	#	-	-	29	-	13	8	8	29	
MW46	14/12/2016	13		0.39	0.8	<0.02	<0.02	<0.05	0.4	0.8	0.05	0.05	86	55	5.7	
QC263	14/12/2016	13	Duplicate of MW46	0.47	1	<0.01	<0.01	-	-	1	-	0.06	88	58	7	
			RPD %	19	22	#	#	-	-	22	-	18	2	5	20	
MW47	14/12/2016	13		0.12	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.08	0.09	58	40	3.6	
QC264	14/12/2016	13	Duplicate of MW47	0.17	0.3	0.01	<0.01	-	-	0.3	-	0.1	61	45	5	
			RPD %	34	100	0	#	-	-	100	-	11	5	12	33	
MW45	18/01/2017	14		0.42	1.3	<0.02	<0.02	<0.05	1.3	0.9	0.5	0.06	74	43	4.8	
QC288	18/01/2017	14	Duplicate of MW45	0.46	0.7	<0.02	<0.02	<0.05	0.7	0.2	0.09	0.08	68	41	4.5	
			RPD %	9	60	#	#	#	60	127	139	29	8	5	6	
MW46	18/01/2017	14		0.37	0.8	<0.02	<0.02	<0.05	0.8	0.4	0.06	<0.05	84	63	10	
QC283	18/01/2017	14	Duplicate of MW46	0.33	1.1	0.03	<0.01	-	1.1	-	0.1	0.06	94	55	7	
			RPD %	11	32	100	#	-	32	-	50	82	11	14	35	
MW47	18/01/2017	14		0.1	<0.2	<0.02	<0.02	<0.05	<0.2	<0.2	0.16	0.07	48	39	7.3	
QC287	18/01/2017	14	Duplicate of MW47	0.11	0.6	0.02	<0.01	-	0.6	-	0.13	0.11	56	40	4	
			RPD %	10	143	67	#	#	143	-	21	44	15	3	58	
MW45	18/01/2017	15		0.2	0.7	<0.02	<0.02	<0.05	0.74	0.54	0.15	<0.05	83	32	4.1	
QC311	18/01/2017	15	Duplicate of MW45	0.35	0.6	<0.01	<0.01	-	0.6	-	0.15	0.1	67	40	6	
			RPD %	55	15	#	#	-	21	-	0	120	21	22	38	
MW46	15/02/2017	15		0.44	1.2	<0.02	<0.02	<0.05	1.2	0.76	0.15	<0.05	96	56	6	
QC309	15/02/2017	15	Duplicate of MW46	0.55	1.3	<0.01	<0.01	-	1.3	-	0.14	0.06	108	71	8	
			RPD %	22	8	#	#	-	8	-	7	82	12	24	29	
MW47	18/01/2017	15		0.22	1	2.1	0.59	2.7	3.7	0.78	0.14	0.09	68	37	3.9	
QC310	18/01/2017	15	Duplicate of MW47	0.3	0.9	1.39	0.56	-	2.8	-	0.13	0.12	59	48	5	
			RPD %	31	11	41	5	-	28	-	7	29	14	26	25	
MW45	15/03/2017	16		0.19	0.4	<0.02	<0.02	<0.05	0.42	0.2	0.13	<0.05	67	39	5.1	
QC335	15/03/2017	16	Duplicate of MW45	0.22	0.4	<0.02	<0.02	<0.05	0.42	0.2	0.14	<0.05	69	42	5.3	
			RPD %	15	0	#	#	#	0	0	7	#	3	7	4	
MW46	15/03/2017	16		0.58	0.8	<0.02	<0.02	<0.05	0.84	0.26	0.09	<0.05	92	58	6	
QC333	15/03/2017	16	Duplicate of MW46	0.55	0.9	<0.02	<0.02	<0.05	0.85	0.3	0.12	<0.05	94	60	6	
			RPD %	5	12	#	#	#	1	14	29	#	2	3	0	
MW47	15/03/2017	16		0.12	0.3	<0.02	<0.02	<0.05	0.28	<0.2	0.14	0.08	46	37	3	
QC334	15/03/2017	16	Duplicate of MW47	0.14	0.3	<0.02	<0.02	<0.05	0.31	<0.2	0.17	0.1	45	37	2.8	
			RPD %	15	0	#	#	#	10	#	19	22	2	0	7	
MW45	10/04/2017	17		0.36	0.4	<0.02	<0.02	<0.05	0.4	<0.2	0.14	0.06	65	38	3.6	
QC348	10/04/2017	17	Duplicate of MW45	0.29	0.3	<0.01	<0.01	-	0.3	-	0.07	0.1	67	38	6	
			RPD %	22	29	#	#	-	29	-	67	50	3	0	50	
MW46	10/04/2017	17		0.37	0.7	<0.02	<0.02	<0.05	0.7	0.3	0.11	<0.05	89	53	5.1	
QC346	10/04/2017	17	Duplicate of MW46	0.41	0.5	<0.01	<0.01	-	0.5	-	0.07	0.07	87	52	8	
			RPD %	10	33	#	#	-	33	-	44	95	2	2	44	
MW47	10/04/2017	17		0.11	0.2	<0.02	<0.02	<0.05	0.2	<0.2	0.17	0.09	59	41	3.2	
QC347	10/04/2017	17	Duplicate of MW47	0.15	0.3	<0.01	<0.01	-	0.3	-	0.15	0.14	49	36	4	
			RPD %	31	40	#	#	-	40	-	13	43	19	13	22	

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
MW = Monitoring well

Investigation Levels:
1. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
2. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
Result Values in highlighted cells exceed nominated IL (2)
Result Values in highlighted cells exceed laboratory LOR

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round One	GW5	QC12	Duplicate	MGT	Zinc	40	3
					Zinc (dissolved)	40	3
		QC13	Triplicate	ALS	Acidity:Alkalinity	134	1
					Chromium	100	1, 5
					Iron	46	1, 5
					Nickel	67	4
					Iron (dissolved)	35	1, 5
					Ammonia (as N)	33	5
					Kjeldahl Nitrogen Total	175	4
					Nitrite as N	33	1, 5
					Nitrogen (Total)	70	5
					TPH C15-28	105	4
		TPH C10-C36 SUM	105	4			
		TPH C16-34	105	4			
	GW05	QC3	Duplicate	MGT	Copper	169	4
					Zinc	50	2
QC4	Triplicate	ALS	Zinc (dissolved)	40	3		
			Chromium	120	4		
			Copper	169	4		
			Zinc	67	4		
Round Two	MW45	QC28	Duplicate	MGT	Aluminium	96	2
					Arsenic	96	3
					Cadmium	82	4
					Chromium	96	5
					Copper	67	2
					Iron	119	2
					Lead	96	2
					Manganese	53	5
					Mercury	67	4
					Nickel	96	3
					Selenium	75	2
					Zinc (dissolved)	164	4
					Kjeldahl Nitrogen Total	36	5
					Nitrogen (Total)	36	5
	Phosphate total (P)	49	5				
	Reactive Phosphorus as P	95	4				
	MW47	QC29	Duplicate	ALS	TDS	64	2
					Alkalinity (total) as CaCO ₃	33	2
					Alkalinity (Bicarbonate as CaCO ₃)	37	2
					Aluminium	40	2
					Arsenic	47	2
					Cadmium	35	2
					Chromium	55	5
					Copper	50	2
					Lead	67	2
					Manganese	76	5
					Mercury	120	4
					Nickel	86	2
					Selenium	133	2
					Zinc	103	2
					Aluminium (dissolved)	193	4
					Cadmium (dissolved)	120	4
					Chromium (dissolved)	120	4
					Iron (dissolved)	194	4
Lead (dissolved)					179	4	
Manganese (dissolved)					118	5	
Nickel (dissolved)	120	3					
Selenium (dissolved)	67	2					
Zinc (dissolved)	147	2					
Ammonia as N	46	5					
Kjeldahl Nitrogen Total	191	4					
Nitrogen (Total)	191	4					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Three	MW45	QC46	Duplicate	ALS	Acidity (as CaCO3)	57	4
					Alkalinity (Carbonate as CaCO3)	67	4
					Aluminium	64	2
					Arsenic	130	2
					Cadmium	94	4
					Chromium	92	5
					Copper	82	2
					Lead	105	2
					Manganese	42	5
					Mercury	67	4
					Nickel	136	3
					Selenium	53	3
					Zinc	50	3
					Aluminium (dissolved)	94	4
	Arsenic (dissolved)	76	5				
	Iron (dissolved)	63	4				
	Kjeldahl Nitrogen Total	40	1				
	Nitrogen (Total)	40	1				
	Reactive Phosphorus as P	105	4				
	MW47	QC47	Duplicate	ALS	TDS	70	5
					Acidity (as CaCO3)	33	4
					Alkalinity (Bicarbonate as CaCO3)	38	5
					Aluminium	174	2
					Arsenic	181	2
					Cadmium	164	4
					Chromium	186	5
					Copper	185	2
					Lead	184	2
Manganese					133	5	
Nickel					190	3	
Selenium					169	3	
Zinc					178	2	
Aluminium (dissolved)					44	4	
Chromium (dissolved)	50	4					
Iron (dissolved)	72	4					
Zinc (dissolved)	120	4					
Kjeldahl Nitrogen Total	92	5					
Nitrate	100	1					
Nitrogen (Total)	92	5					
Reactive Phosphorus as P	95	4					
Round Four	MW45	QC79	Duplicate	ALS	Aluminium	180	2
					Arsenic	195	4
					Cadmium	67	4
					Chromium	156	5
					Copper	120	2
					Iron	197	5
					Lead	192	4
					Manganese	131	4
					Nickel	194	4
					Selenium	181	4
					Zinc	100	3
					Manganese (dissolved)	46	4
					Ammonia	67	5
					Reactive Phosphorus as P	95	4
	MW47	QC80	Duplicate	ALS	TDS	41	5
					Aluminium	74	2
					Chromium	58	5
					Copper	33	2
					Lead	42	2
					Nickel	56	2
					Selenium	108	2
					Zinc	34	2
					Aluminium (dissolved)	86	4
					Arsenic (dissolved)	67	5
					Iron (dissolved)	67	4
					Nickel (dissolved)	67	4
					Kjeldahl Nitrogen Total	111	5
					Nitrate	67	4
Nitrogen (total)	111	5					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Five	MW45	QC91	Duplicate	ALS	Aluminium	42	2
					Chromium	40	5
					Selenium	108	2
					Aluminium (dissolved)	199	3
					Arsenic (dissolved)	120	4
					Lead (dissolved)	120	4
					Nickel (dissolved)	120	4
					Selenium (dissolved)	133	3
					Kjeldahl Nitrogen Total	59	5
					Nitrite	100	4
	Nitrogen (total)	59	5				
	Reactive Phosphorus as P	95	5				
	TDS	57	5				
	Aluminium	36	2				
	Cadmium	156	4				
	Chromium	49	5				
	Iron	39	2				
	Selenium	108	3				
	Aluminium (dissolved)	86	4				
	Arsenic (dissolved)	67	5				
Iron (dissolved)	120	4					
Nickel (dissolved)	67	4					
Selenium (dissolved)	164	3					
Kjeldahl Nitrogen Total	167	4					
Nitrate	194	4					
Nitrogen	114	5					
Round Six	MW45	QC91	Duplicate	ALS	Alkalinity (Bicarbonate as CaCO ₃)	30	2
					Alkalinity (total as CaCO ₃)	30	2
					Aluminium	115	2
					Arsenic	95	2
					Chromium	97	5
					Copper	67	2
					Iron	68	2
					Lead	86	3
					Manganese	40	5
					Mercury	67	4
					Nickel	98	3
					Selenium	133	3
					Zinc	53	3
	Dissolved arsenic	67	4				
	Dissolved iron	91	5				
	Dissolved Nickel	67	4				
	Dissolved Selenium	133	4				
	Ammonia	38	5				
	Kjeldahl Nitrogen Total	55	5				
	Nitrogen (total)	55	5				
	Reactive Phosphorus as P	126	4				
	Aluminium	103	2				
	Arsenic	40	5				
	Chromium	90	5				
	Copper	67	2				
	Iron	45	2				
Lead	62	3					
Mercury	67	4					
Nickel	52	3					
Selenium	108	3					
Dissolved nickel	143	4					
Dissolved zinc	86	4					
Ammonia	108	5					
Kjeldahl Nitrogen Total	67	5					
Nitrate	159	5					
Nitrogen (total)	93	5					
Round Seven	MW47	QC125	Duplicate	ALS	TDS	35	5
					Aluminium	167	2
					Arsenic	150	3
					Cadmium	74	2
					Chromium	161	5
					Copper	153	2
					Iron	156	5
					Lead	164	3
					Nickel	166	3
					Selenium	172	3
					Zinc	127	2
					Dissolved Selenium	133	4
					Kjeldahl Nitrogen Total	80	5
Nitrogen Total	80	3					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Eight	MW45	QC146	Duplicate	ALS	Alkalinity (total) as CaCO ₃	75	4
					Aluminium	89	2
					Copper	67	3
					Manganese	82	4
					Nickel	53	3
					Selenium	86	4
					Dissolved Aluminium	86	4
					Dissolved Arsenic	156	4
					Dissolved Selenium	133	4
	Nitrate	100	4				
	MW47	QC145	Duplicate	ALS	Aluminium	71	2
					Cadmium	95	4
					Chromium	67	5
					Lead	44	3
					Nickel	60	3
					Selenium	50	4
					Zinc	77	2
					Dissolved Aluminium	86	4
Dissolved Arsenic					143	4	
Dissolved Iron	113	4					
Ammonia	34	5					
Round Nine	MW45	QC166	Duplicate	ALS	TDS	97	5
					EC	104	5
					Total Kieldjal Nortogen	82	4
					Total nitrogen	169	4
					Reactive Phosphorous	82	4
					Acidity (as CaCO ₃)	75	5
	Alkalinity total (as CaCO ₃)	59	5				
	Alkalinity bicarbonate (as CaCO ₃)	59	5				
	MW47	QC165	Duplicate	ALS	TDS	107	5
					EC	127	5
					Alkalinity total (as CaCO ₃)	140	5
					Alkalinity bicarbonate (as CaCO ₃)	140	5
					Total Kieldjal Nortogen	57	4
					Total nitrogen	160	4
					Chloride	133	5
					Ammonia	75	5
					Nitrate	67	1
					Aluminium	56	4
					Arsenic	34	1
					Cadmium	67	1
					Lead	50	4
Nickel					35	4	
Selenium					71	1	
Zinc	70	4					
Dissolved aluminium	70	4					
Dissolved arsenic	50	1					
Dissolved chromium	50	4					
Dissolved iron	135	5					
Dissolved zinc	67	5					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Ten	MW45	QC202	Duplicate	ALS	Acidity	149	4
					Total Alkalinity	60	5
					Alkalinity (Bicarbonate)	60	5
					Chloride	153	5
					Total Aluminium	190	2
					Total Arsenic	143	4
					Total Cadmium	67	4
					Total Chromium	181	4
					Total Copper	171	3
					Total Iron	194	5
					Total Lead	166	3
					Total Managnese	183	4
					Total Nickel	171	4
					Total Selenium	143	4
					Total Zinc	197	3
					Dissolved Aluminium	78	4
					Dissolved Chromium	67	4
					Dissolved Iron	137	4
					Dissolved Managnese	175	4
					Dissolved Zinc	120	3
	Ammonia as N	79	5				
	Kjeldahl Nitrogen Total	169	5				
	Nitrogen (Total)	169	5				
	Reactive Phosphorus	82	4				
	Calcium	107	5				
	Magnesium	148	5				
	Potassium	82	5				
	Total Aluminium	179	2				
	Total Arsenic	163	3				
	Total Cadmium	105	4				
	Total Chromium	166	1				
	Total Copper	170	3				
	Total Iron	168	5				
	Total Lead	156	3				
Total Managnese	59	5					
Total Nickel	160	3					
Total Selenium	57	1					
Total Zinc	141	2					
Dissolved Aluminium	86	4					
Dissolved Arsenic	35	1					
Dissolved Chromium	50	4					
Dissolved Iron	119	4					
Dissolved Manganese	135	4					
Dissolved Nickel	169	4					
Dissolved Selenium	67	4					
Ammonia as N	77	5					
Kjeldahl Nitrogen Total	150	4					
Nitrite (as N)	67	4					
Nitrogen (Total)	150	4					
Reactive Phosphorus	61	5					
Round Eleven	MW45	QC220	Duplicate	MGT	Total Aluminium	40	2
					Total Arsenic	67	4
					Total Chromium	67	4
					Total Iron	70	5
					Total Zinc	82	4
					Dissolved Nickel	67	1
					Nitrogen (Organic)	67	1
					Reactive Phosphorus as P	57	1
Calcium	39	5					
Potassium	194	5					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Twelve	MW47	QC219	Duplicate	MGT	Total Aluminium	71	2
					Total Arsenic	67	1
					Total Chromium	32	1
					Total Iron	93	5
					Total Lead	80	3
					Total Manganese	33	1
					Total Nickel	67	1
					Total Selenium	40	1
					Potassium	195	5
	MW45	QC247	Duplicate	ALS	Acidity (as CaCO ₃)	100	4
					Kjeldahl Nitrogen Total	40	1
					Reactive Phosphorus as P	105	4
					Total Aluminium	74	3
					Total Arsenic	76	1
					Total Iron	55	1
					Total Lead	35	1
					Total Manganese	39	4
					Total Nickel	35	1
					Total Selenium	86	4
					Dissolved Aluminium	113	4
	MW47	QC246	Duplicate	ALS	Dissolved Chromium	86	4
					Dissolved Iron	70	4
					Acidity (as CaCO ₃)	57	4
					Ammonia as N	60	5
					Kjeldahl Nitrogen Total	86	5
					Nitrogen (Total)	50	5
					Reactive Phosphorus as P	53	5
					Reactive Phosphorus as P	50	5
					Total Aluminium	89	3
					Total Chromium	43	1
Round Thirteen	MW45	QC265	Duplicate	ALS	Total Copper	46	4
					Total Iron	46	5
					Total Lead	46	3
					Total Nickel	45	1
					Total Selenium	108	1
					Total Zinc	67	3
					Dissolved Aluminium	63	4
					Dissolved Chromium	86	4
					Dissolved Iron	75	4
					TDS	52	5
					Total Aluminium	163	2
					Total Arsenic	191	3
	MW47	QC264	Duplicate	ALS	Total Chromium	167	1
					Total Copper	143	3
					Total Iron	196	5
					Total Lead	185	3
					Total Manganese	90	4
					Total Nickel	189	3
					Total Selenium	141	4
					Total Zinc	59	3
					Dissolved Aluminium	33	4
MW47	QC264	Duplicate	ALS	Dissolved Arsenic	50	4	
				Dissolved Iron	56	4	
				Kjeldahl Nitrogen Total	100	4	
				Nitrogen (Total)	100	4	
				Potassium	33	5	
				TDS	44	5	
				Acidity (as CaCO ₃)	57	4	
				Total Aluminium	193	2	
				Total Arsenic	188	3	
				Total Cadmium	131	4	
Total Chromium	193	1					
Total Copper	176	3					
Total Iron	193	5					
Total Lead	194	3					
Total Manganese	48	1					
Total Nickel	193	3					
Total Selenium	168	4					
Total Zinc	178	3					
Dissolved Chromium	50	4					
Dissolved Iron	140	4					
Dissolved Manganese	63	1					

Explanation Codes:

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Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
Round Fourteen	MW45	QC288	Duplicate	MGT	TDS	71	2
					Aluminium	52	3
					Arsenic	67	1, 5
					Chromium	67	4
					Iron	113	3
					Lead	67	4
					Selenium	67	4
					Arsenic (Filtered)	67	4
					Nickel (Filtered)	67	1, 5
					Kjeldahl Nitrogen Total	60	2
					Nitrogen (Organic)	60	2
					Nitrogen (Total)	127	5
					Phosphate total (P)	139	5
					MW47	QC287	Duplicate
	Arsenic	56	1, 5				
	Chromium	88	1, 5				
	Copper	141	4				
	Iron	88	2				
	Lead	60	3				
	Manganese	67	1, 5				
	Nickel	80	1, 5				
	Selenium	63	1, 5				
	Iron (Filtered)	133	4				
	Manganese (Filtered)	143	4				
	Kjeldahl Nitrogen Total	143	4				
	Round Fifteen	MW45	QC311	Duplicate	ALS	Acidity (as CaCO ₃)	105
Aluminium						121	2
Arsenic						98	1, 5
Chromium						106	1, 5
Copper						105	4
Iron						133	2
Lead						99	1, 5
Manganese						84	4
Nickel						93	1, 5
Zinc						30	3
Aluminium (Filtered)						113	4
Arsenic (Filtered)						50	4
Manganese (Filtered)						51	4
Selenium (Filtered)						86	4
Reactive Phosphorus as P		120	2				
MW47		QC310	Duplicate	ALS	Aluminium	179	2
					Arsenic	126	1, 5
					Cadmium	82	4
					Chromium	169	1, 5
					Copper	138	1, 5
					Iron	175	3
					Lead	157	1, 5
					Manganese	62	1, 5
					Nickel	146	1, 5
					Selenium	45	1, 5
					Zinc	57	3
	Aluminium (Filtered)				103	4	
Arsenic (Filtered)	55	1, 5					
Manganese (Filtered)	129	4					
Nickel (Filtered)	86	1, 5					
Zinc (Filtered)	120	4					
Nitrate (as N)	41	2					

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3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.

* Differences in nutrient concentrations between the primary and secondary laboratories could also be attributable to the different analytical techniques employed by the laboratories for these analyses.

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code	
Round Sixteen	MW45	QC335	Duplicate	MGT	Aluminium	100	2	
					Arsenic	147	1, 5	
					Chromium	120	1, 5	
					Copper	120	1, 5	
					Iron	175	2	
					Lead	127	1, 5	
					Manganese	82	4	
					Mercury	120	4	
					Nickel	147	1, 5	
					Selenium	156	4	
					Zinc	100	3	
	MW47	QC334	Duplicate	MGT	Arsenic	67	4	
Round Seventeen	MW45	QC348	Duplicate	ALS	Acidity (as CaCO ₃)	82	4	
					Aluminium	77	2	
					Arsenic	86	1, 5	
					Chromium	82	1, 5	
					Iron	170	3	
					Lead	155	4	
					Manganese	57	4	
					Nickel	138	1, 5	
					Selenium	57	4	
					Zinc	46	3	
					Aluminium (Filtered)	94	4	
					Arsenic (Filtered)	86	4	
					Chromium (Filtered)	86	4	
					Iron (Filtered)	70	4	
	Zinc (Filtered)	120	4					
	Phosphate total (P)	67	5					
	Reactive Phosphorus as P	50	2					
	Potassium	50	2					
		MW47	QC347	Duplicate	ALS	Aluminium	118	2
	Arsenic					139	4	
	Chromium					127	2	
	Copper					117	4	
	Iron					156	3	
	Lead					152	4	
	Nickel					155	4	
	Arsenic (Filtered)					86	4	
Chromium (Filtered)	50					4		
Iron (Filtered)	98					4		
Manganese (Filtered)	90					4		
Zinc (Filtered)	67					4		
Ammonia as N	31	5						

Explanation Codes:

1. Low analyte concentrations have exaggerated the percentage differences with respect to small total concentration differences. The calculated RPD values are not considered to affect the integrity of the results as both results remain below assessment criteria (where available).
2. RPD results are above the acceptance limit, however both results are above the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.

Table 34
Surface Water Field Results - Others
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Well ID	Date	Sampling Round	Acidity mg/L	Alkalinity mg/L	pH	ORP mV	Conductivity mS/cm	DO mg/L	DO %	Temperature °C	Comments
SWL19-1	3/02/2016	2	20	375	6.40	25	3.75	1.11	13.1	22.8	
SWL19-2	3/02/2016	2	35	171	6.52	118	4.74	11.40	153.0	30.1	
SWL19-3	3/02/2016	2	25	267	6.60	38	3.45	0.53	6.0	20.8	
SWL19-1	18/02/2016	3	-	-	5.68	113	4.59	8.72	73.9	7.5	
SWL19-2	18/02/2016	3	-	-	5.86	113	4.64	10.13	85.8	7.4	
SWL19-3	18/02/2016	3	-	-	5.78	112	4.74	9.93	83.8	7.3	
SWL19-1	16/03/2016	4	75	30	6.06	-181	4.09	0.77	9.1	22.3	
SWL19-2	16/03/2016	4	25	75	6.17	-87	3.94	1.00	12.1	23.5	
SWL19-3	16/03/2016	4	75	25	6.40	-172	3.86	1.17	14.1	23.5	
SWL19-1	15/04/2016	5	15	450	5.72	-4	3.21	1.77	20.0	21.0	
SWL19-2	15/04/2016	5	30	450	6.23	-119	3.25	1.06	11.9	20.6	
SWL19-3	15/04/2016	5	30	440	6.36	-124	3.19	1.25	14.1	20.9	
SWL19-1	9/05/2016	6	30	180	4.94	100	4.06	2.99	30.4	15.5	
SWL19-2	9/05/2016	6	25	185	5.26	-78	4.02	2.63	26.8	15.6	
SWL19-3	9/05/2016	6	30	190	5.21	12	4.07	3.30	33.0	14.8	
SWL19-1	22/06/2016	7	50	105	5.64	124	2.74	4.58	44.4	13.5	
SWL19-2	22/06/2016	7	50	105	5.70	88	2.80	5.12	49.3	13.2	
SWL19-3	22/06/2016	7	50	105	5.55	101	4.09	5.62	53.5	12.6	
SWL19-1	12/07/2016	8	30	30	5.54	126	1.68	6.33	56.6	10.7	
SWL19-2	12/07/2016	8	30	30	5.73	92	1.76	6.39	56.9	10.6	
SWL19-3	12/07/2016	8	30	30	5.84	77	1.78	9.16	82.2	10.8	
SWL19-1	18/08/2016	9	30	50	5.86	81	2.28	4.73	47.0	14.1	
SWL19-2	18/08/2016	9	30	50	5.96	-66	2.28	4.23	42.0	14.1	
SWL19-3	18/08/2016	9	30	50	5.98	3	2.53	7.19	71.3	14.0	
SWL19-1	28/09/2016	10	12	30	5.93	86	3.36	5.94	56.1	12.6	
SWL19-2	28/09/2016	10	15	25	6.08	80	3.36	5.34	50.1	12.3	
SWL19-3	28/09/2016	10	15	30	6.15	67	3.35	5.81	55.5	13.1	
SWL19-1	24/10/2016	11	15	30	6.32	85	4.20	3.31	35.3	17.5	
SWL19-2	24/10/2016	11	15	30	6.23	67	4.10	3.11	34.7	19.7	
SWL19-3	24/10/2016	11	15	30	6.21	1	5.67	2.71	30.9	20.6	
SWL19-1	28/11/2016	12	15	40	5.44	206	4.14	2.24	25.2	20.4	
SWL19-2	28/11/2016	12	15	40	5.68	121	4.19	3.06	33.7	19.2	
SWL19-3	28/11/2016	12	15	40	5.83	-67	4.10	2.44	26.9	19.3	
SWL19-1	14/12/2016	13	50	45	5.34	12	4.55	2.62	29.2	20.2	
SWL19-2	14/12/2016	13	50	45	5.58	-20	4.58	2.00	21.9	19.3	
SWL19-3	14/12/2016	13	50	45	6.12	-250	4.34	1.73	19.5	20.6	
SWL19-1	18/01/2017	14	50	30	5.16	284	4.07	1.87	21.9	22.2	
SWL19-2	18/01/2017	14	50	30	5.28	165	3.93	1.31	14.8	20.3	
SWL19-3	18/01/2017	14	50	30	5.18	15	3.88	0.99	11.1	19.8	
SWL19-1	21/02/2017	15	50	25	6.22	-117	3.43	0.01	0.1	20.8	
SWL19-2	-	-	-	-	-	-	-	-	-	-	Dry
SWL19-3	21/02/2017	15	50	25	6.29	-55	3.48	0.56	6.3	20.4	
SWL19-1	14/03/2017	16	50	25	5.78	135	3.32	1.14	12.8	20.0	
SWL19-2	-	-	-	-	-	-	-	-	-	-	Dry
SWL19-3	14/03/2017	16	50	25	5.97	0	3.46	1.32	14.7	19.8	
SWL19-1	10/04/2017	17	25	45	5.32	215.7	3871.600	3.83	37.5	13.98	
SWL19-2	10/04/2017	17	-	-	-	-	-	-	-	-	Dry
SWL19-3	10/04/2017	17	-	-	-	-	-	-	-	-	Dry

Notes:
SWL= Surface water location
ID = identification
mg/L: milligrams per litre
mS/cm = millisiemen per centimetre
mV = millivolts
°C = degrees Celsius
- : Sample not analysed

Table 35
 Surface Water Analytical Results
 ASS Parameters and General Parameters
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	General Parameters				Acid Sulfate Parameters and Major Anions						ASS Ratios			
				pH (Lab)	TDS	Turbidity	Electrical conductivity (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Carbonate as CaCO3)	Sulphate as S	Chloride	Acidity : Alkalinity	Sulfate : Chloride	Alkalinity : Sulfate
			Units	pH Units	mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	%	%
			LOR	0.01	10	1	1	10	20	10	20	10	5	1	-	-	-
			1. ANZECC Lowland	Lower-6.5 Upper-8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-< 60 Upper-> 180	NE	NE	NE	NE	NE	>1	>0.5	<5
SSM-1	21/12/2015	1		6.7	390	-	680	<10	<20	-	<20	<10	24	180	0.50	0.13	0.83
SSM-2	21/12/2015	1		6.7	370	-	580	<10	<20	-	<20	<10	23	150	0.50	0.15	0.87
SSM-3	21/12/2015	1		7.5	370	-	610	<10	74	-	74	<10	6	160	0.14	0.04	12.33
SWL19-1	3/02/2016	2		8.3	3300	-	5800	<10	150	<10	150	<10	16	1900	0.07	0.01	9.38
SWL19-2	3/02/2016	2		8.3	3300	-	6000	<10	160	<10	150	<10	16	1900	0.06	0.01	10
SWL19-3	3/02/2016	2		8.4	3300	-	5700	<10	150	<10	140	<10	15	1900	0.07	0.01	10
SWL19-1	18/02/2016	3		7.3	2500	150	4500	<10	37	<10	37	<10	27	1300	0.27	0.02	1.37
SWL19-2	18/02/2016	3		7.5	2500	12	4500	<10	41	<10	41	<10	30	1400	0.24	0.02	1.37
SWL19-3	18/02/2016	3		7.2	2500	10	4600	<10	41	<10	41	<10	32	1400	0.24	0.02	1.28
SWL19-1	16/03/2016	4		7.4	2800	330	4100	<10	56	<10	56	<10	29	1400	0.18	0.02	1.93
SWL19-2	16/03/2016	4		7.6	2800	14	4100	<10	59	<10	59	<10	29	1400	0.17	0.02	2.03
SWL19-3	16/03/2016	4		7.5	2700	41	4000	<10	66	<10	66	<10	26	1300	0.15	0.02	2.54
SWL19-1	12/04/2016	5		7.6	2100	2	3700	<10	45	<10	45	<10	32	1100	0.22	0.03	1.41
SWL19-2	12/04/2016	5		7.4	2100	21	3700	<10	41	<10	41	<10	33	1200	0.24	0.03	1.24
SWL19-3	12/04/2016	5		7.4	2100	25	3700	<10	37	<10	37	<10	36	1200	0.27	0.03	1.03
SWL19-1	4/05/2016	6		5.9	2300	1.5	3500	<10	<20	<10	<20	<10	43	1100	0.50	0.04	0.47
SWL19-2	4/05/2016	6		5.7	2300	1.7	3400	<10	<20	<10	<20	<10	48	1200	0.50	0.04	0.42
SWL19-3	4/05/2016	6		5.7	2300	1.7	3400	<10	<20	<10	<20	<10	48	1100	0.50	0.04	0.42
SWL19-1	22/06/2016	7		6.4	1700	8.4	2900	120	<20	<10	<20	<10	31	830	6.00	0.04	0.65
SWL19-2	22/06/2016	7		6.5	1600	37	2800	93	<20	<10	<20	<10	26	820	4.65	0.03	0.77
SWL19-3	22/06/2016	7		6.1	2400	25	4400	40	<20	<10	<20	<10	33	1400	2.00	0.02	0.61
SWL19-1	12/07/2016	8		5.8	850	1.7	1400	11	<20	<10	<20	<10	18	450	0.55	0.04	1.11
SWL19-2	12/07/2016	8		5.9	860	3.4	1400	<10	<20	<10	<20	<10	18	460	0.50	0.04	1.11
SWL19-3	12/07/2016	8		6.2	900	12	1400	<10	<20	<10	<20	<10	17	460	0.50	0.04	1.18
SWL19_1	15/08/2016	9		6.4	1400	<1	2400	<10	<20	<10	<20	<10	40	700	0.50	0.06	0.50
SWL19_2	15/08/2016	9		6.4	1400	1.7	2400	<10	<20	<10	<20	<10	21	710	0.50	0.03	0.95
SWL19_3	15/08/2016	9		6.4	1600	9.1	2700	<10	<20	<10	<20	<10	20	780	0.50	0.03	1.00
SWL19-1	28/09/2016	10		6.7	1900	<1	3000	<10	<20	<10	<20	<10	29	990	0.50	0.03	0.69
SWL19-2	28/09/2016	10		6.7	1900	1.4	3000	10	<20	<10	<20	<10	28	900	0.50	0.03	0.71
SWL19-3	28/09/2016	10		7	1900	<1	3000	<10	<20	<10	<20	<10	29	940	0.50	0.03	0.69
SWL19-1	24/10/2016	11		6.4	2300	<1	4100	12	22	<10	22	<10	40	1200	0.55	0.03	0.55
SWL19-2	24/10/2016	11		6.3	2300	12	4200	13	22	<10	22	<10	39	1200	0.59	0.03	0.56
SWL19-3	24/10/2016	11		6.4	3100	27	5400	13	25	<10	25	<10	<5	1900	0.52	0.00	5.00
SWL19-1	28/11/2016	12		6.3	2600	7.7	3800	<10	<20	<10	<20	<10	140	1300	0.50	0.11	0.14
SWL19-2	28/11/2016	12		6.2	2600	3.2	3800	<10	<20	<10	<20	<10	140	1300	0.50	0.11	0.14
SWL19-3	28/11/2016	12		6.1	2500	13	3700	<10	<20	<10	<20	<10	140	1200	0.50	0.12	0.14
SWL19-1	14/12/2016	13		6.9	2400	11	4400	<10	<20	<10	<20	<10	150	1300	0.50	0.12	0.13
SWL19-2	14/12/2016	13		6.2	2400	15	4200	<10	<20	<10	<20	<10	150	1300	0.50	0.12	0.13
SWL19-3	14/12/2016	13		6.2	2400	<1	4300	<10	<20	<10	<20	<10	150	1400	0.50	0.11	0.13
SWL19-1	18/01/2017	14		5.7	2700	6.7	4600	<10	66	<10	66	<10	150	1400	0.15	0.11	0.13
SWL19-2	18/01/2017	14		5.7	2700	1.5	4500	<10	<20	<10	<20	<10	150	1300	0.50	0.12	0.13
SWL19-3	18/01/2017	14		5.7	2700	42	4500	<10	<20	<10	<20	<10	150	1300	0.50	0.12	0.13
SWL19-1	21/02/2017	15		6.7	2000	220	3200	30	68	<10	68	<10	41	950	0.44	0.04	0.49
SWL19-3	21/02/2017	15		6.8	2000	140	3100	24	60	<10	60	<10	29	930	0.40	0.03	0.69
SWL19_1	14/03/2017	16		6.2	2300	200	4200	17	<20	<10	<20	<10	130	1200	1.70	0.11	0.08
SWL19_3	14/03/2017	16		6.1	2200	67	4200	15	<20	<10	<20	<10	130	1200	1.50	0.11	0.08
SWL19-1	10/04/2017	17		6.2	2500	63	4600	13	<20	<10	<20	<10	140	1300	1.30	0.11	0.07

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 SWL = Surface water location
 µS/cm = Microsiemens per centimeter
 NTU = Nephelometric Turbidity Units

Investigation Levels:
 1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
 2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 36
 Surface Water Analytical Results - Others
 Total and Dissolved Metals
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
LOR	0.05	0.001	0.00005	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.001	0.05	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001		
1. ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008			
2. DER (2015)	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE			
SSM-1	21/12/2015	1		0.69	<0.001	<0.0002	-	0.002	1.1	<0.001	-	<0.0001	0.002	<0.001	0.088	0.12	<0.001	<0.0002	-	0.002	0.23	<0.001	-	<0.0001	<0.001	<0.001	0.013
SSM-2	21/12/2015	1		4.20	0.008	<0.0002	-	0.013	48	0.018	-	<0.0001	0.003	0.001	0.130	<0.05	<0.001	<0.0002	-	0.002	0.08	<0.001	-	<0.0001	<0.001	<0.001	0.009
SSM-3	21/12/2015	1		0.49	0.002	<0.0002	-	0.003	1.2	0.004	-	<0.0001	0.001	<0.001	0.016	0.21	0.001	<0.0002	-	0.001	0.41	<0.001	-	<0.0001	<0.001	<0.001	0.003
SWL19-1	3/02/2016	2		0.06	<0.001	<0.0001	<0.001	<0.001	0.43	<0.001	0.024	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.0001	<0.001	<0.001	0.14	<0.001	0.023	<0.0001	<0.001	<0.001	0.002
SWL19-2	3/02/2016	2		0.11	<0.001	<0.0001	<0.001	<0.001	3	<0.001	0.057	<0.0001	0.002	<0.001	0.005	0.11	<0.001	<0.0001	<0.001	<0.001	1.5	<0.001	0.048	<0.0001	0.002	<0.001	0.005
SWL19-3	3/02/2016	2		0.12	<0.001	<0.0001	<0.001	<0.001	1.7	<0.001	0.022	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	<0.0001	<0.001	<0.001	0.11	<0.001	0.022	<0.0001	<0.001	<0.001	0.002
SWL19-1	18/02/2016	3		0.8	<0.001	<0.0005	<0.001	0.002	6	0.001	0.018	<0.0001	0.001	<0.001	0.013	<0.05	<0.001	<0.0002	<0.001	<0.001	0.34	<0.001	0.014	<0.0001	<0.001	<0.001	0.003
SWL19-2	18/02/2016	3		<0.05	<0.001	<0.0005	<0.001	<0.001	0.22	<0.001	0.01	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	<0.0002	<0.001	<0.001	0.09	<0.001	0.009	<0.0001	<0.001	<0.001	0.003
SWL19-3	18/02/2016	3		0.45	<0.001	<0.0005	<0.001	<0.001	7.8	<0.001	0.02	<0.0001	<0.001	<0.001	0.005	<0.05	<0.001	<0.0002	<0.001	<0.001	0.13	<0.001	0.01	<0.0001	<0.001	<0.001	0.003
SWL19-1	16/03/2016	4		0.15	<0.001	<0.00005	<0.001	<0.001	1.8	<0.001	0.13	<0.0001	0.001	<0.001	0.004	0.09	<0.001	<0.00005	<0.001	<0.001	0.41	<0.001	0.11	<0.0001	0.001	<0.001	0.004
SWL19-2	16/03/2016	4		0.13	<0.001	<0.00005	<0.001	<0.001	1.7	<0.001	0.16	<0.0001	<0.001	<0.001	0.004	0.09	<0.001	<0.00005	<0.001	<0.001	0.39	<0.001	0.14	<0.0001	<0.001	<0.001	0.004
SWL19-3	16/03/2016	4		0.14	<0.001	<0.00005	<0.001	<0.001	2.4	<0.001	0.2	<0.0001	0.001	<0.001	0.005	0.08	<0.001	<0.00005	<0.001	<0.001	0.59	<0.001	0.18	<0.0001	<0.001	<0.001	0.005
SWL19-1	12/04/2016	5		0.08	<0.001	<0.00005	<0.001	<0.001	0.31	<0.001	0.073	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.00005	<0.001	<0.001	0.13	<0.001	0.073	<0.0001	<0.001	<0.001	<0.001
SWL19-2	12/04/2016	5		<0.05	<0.001	<0.00005	0.001	<0.001	1.4	<0.001	0.078	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	<0.00005	<0.001	<0.001	0.13	<0.001	0.067	<0.0001	<0.001	<0.001	0.002
SWL19-3	12/04/2016	5		<0.05	<0.001	<0.00005	<0.001	<0.001	0.45	<0.001	0.078	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.00005	<0.001	<0.001	0.17	<0.001	0.065	<0.0001	<0.001	<0.001	0.004
SWL19-1	4/05/2016	6		<0.05	<0.001	<0.00005	<0.001	0.002	0.06	<0.001	0.051	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.051	<0.0001	<0.001	<0.001	0.002
SWL19-2	4/05/2016	6		<0.05	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	0.055	<0.0001	<0.001	<0.001	0.003	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.054	<0.0001	<0.001	<0.001	0.003
SWL19-3	4/05/2016	6		<0.05	<0.001	<0.00005	<0.001	<0.001	0.17	<0.001	0.056	<0.0001	<0.001	<0.001	0.002	<0.05	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	0.056	<0.0001	<0.001	<0.001	0.002
SWL19-1	22/06/2016	7		0.13	0.001	<0.0002	<0.001	<0.001	0.53	<0.001	0.012	<0.0001	0.003	<0.001	0.005	0.08	<0.001	<0.0001	<0.001	<0.001	0.06	<0.001	0.011	<0.0001	0.003	<0.001	0.004
SWL19-2	22/06/2016	7		0.11	0.003	0.00005	0.001	<0.001	0.63	<0.001	0.015	<0.0001	0.004	<0.001	0.008	0.06	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	0.012	<0.0001	0.003	<0.001	0.005
SWL19-3	22/06/2016	7		0.14	0.003	0.00005	0.002	<0.001	3.3	<0.001	0.094	<0.0001	0.005	<0.001	0.009	0.06	0.003	<0.00005	<0.001	<0.001	0.58	<0.001	0.092	<0.0001	0.004	<0.001	0.009
SWL19-1	12/07/2016	8		0.1	<0.001	<0.00005	<0.001	<0.001	0.22	<0.001	<0.005	<0.0001	0.003	<0.001	0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	0.14	<0.001	<0.005	<0.0001	0.002	<0.001	0.004
SWL19-2	12/07/2016	8		0.09	<0.001	<0.00005	<0.001	<0.001	0.27	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	0.002	<0.001	0.005
SWL19-3	12/07/2016	8		0.15	<0.001	<0.00005	0.002	0.002	1.1	<0.001	0.016	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	0.37	<0.001	0.013	<0.0001	0.002	<0.001	0.004
SWL19_1	15/08/2016	9		0.09	<0.001	<0.00005	<0.001	<0.001	0.12	<0.001	<0.005	<0.0001	0.003	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	<0.005	<0.0001	0.003	<0.001	0.004
SWL19_2	15/08/2016	9		0.13	<0.001	<0.00005	0.001	0.002	0.53	<0.001	0.007	<0.0001	0.003	<0.001	0.006	<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	<0.005	<0.0001	0.003	<0.001	0.005
SWL19_3	15/08/2016	9		0.11	<0.001	<0.00005	0.001	<0.001	1.2	<0.001	0.026	<0.0001	0.003	<0.001	0.008	<0.05	<0.001	<0.00005	<0.001	<0.001	0.44	<0.001	0.023	<0.0001	0.003	<0.001	0.008
SWL19-1	28/09/2016	10		<0.05	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	<0.005	<0.0001	0.003	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
SWL19-2	28/09/2016	10		<0.05	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	0.003	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
SWL19-3	28/09/2016	10		<0.05	<0.001	<0.00005	<0.001	0.002	<0.05	<0.001	<0.005	<0.0001	0.003	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
SWL19-1	24/10/2016	11		<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	0.007	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.006	<0.0001	0.002	<0.001	<0.005
SWL19-2	24/10/2016	11		<0.05	<0.001	<0.00005	<0.001	<0.001	0.09	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	<0.005	<0.0001	0.002	<0.001	<0.005
SWL19-3	24/10/2016	11		0.16	0.002	<0.00005	0.003	<0.001	6.3	<0.001	0.14	<0.0001	0.006	<0.001	<0.005	0.10	0.001	<0.00005	0.002	<0.001	2.70	<0.001	0.13	<0.0001	0.005	<0.001	<0.005
SWL19-1	28/11/2016	12		<0.05	<0.001	<0.0002	<0.001	<0.001	0.08	<0.001	0.016	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	0.015	<0.0001	<0.001	<0.001	<0.005
SWL19-2	28/11/2016	12		<0.05	<0.001	<0.0002	<0.001	<0.001	0.08	<0.001	0.017	<0.0001	0.001	<0.001	<0.005	<0.05	<0.001	<0.0002	<0.001	<0.001	<0.05	<0.001	0.014	<0.0001	<0.001		

Sample ID	Sample Date	Sampling Round	Analyte	Nutrients								Major Cations				Biological				
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Total)	Nitrogen (Organic)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	Sodium	Thermotolerant Coliforms	E. Coli		
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100ml	cfu/100 ml
			LOR	0.01	0.2	0.02	0.02	0.05	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5	0.5	1	1
			1. ANZECC Lowland	NE	NE	NE	NE	0.15	1.2	NE	0.065	0.04	NE	NE	NE	NE	NE	NE	NE	1
			2. ANZECC FW 95%	0.9	NE	0.7	NE	0.1	1.5	NE	0.06	0.03	NE	NE	NE	NE	NE	NE	NE	NE
			3. DER (2015)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
SSM-1	21/12/2015	1		0.03	<0.2	0.25	<0.01	0.25	0.3	-	<0.05	<0.05	24	19	6	100	>16,000	7		
SSM-2	21/12/2015	1		0.01	1.5	<0.01	<0.01	<0.01	1.5	-	0.37	<0.05	22	17	4.9	93	340	10		
SSM-3	21/12/2015	1		0.07	1.2	<0.01	<0.01	<0.01	1.2	-	<0.05	<0.05	19	17	7.3	92	540	8		
SWL17-1	28/01/2016	2		0.06	0.5	0.07	<0.02	-	0.6	0.4	<0.05	<0.05	18	8.7	2.1	57	110	79		
SWL17-2	28/01/2016	2		0.06	0.5	0.07	<0.02	-	0.6	0.4	<0.05	<0.05	16	7.7	2.1	52	170	23		
SWL17-3	28/01/2016	2		0.06	0.6	0.07	<0.02	-	0.7	0.5	<0.05	<0.05	17	8.1	2.1	53	350	33		
SWL17-1	18/02/2016	3		0.06	1.3	0.02	<0.02	<0.05	1.3	-	0.1	0.09	1.6	5.6	1.6	31	330	3500		
SWL17-2	18/02/2016	3		0.05	1	0.02	<0.02	<0.05	1	-	0.1	0.09	1.6	5.6	1.6	32	130	330		
SWL17-3	18/02/2016	3		0.05	1.3	0.02	<0.02	<0.05	1.3	-	0.09	0.08	1.8	5.5	1.4	31	110	700		
SWL17-1	22/03/2016	4		0.04	1.2	<0.02	<0.02	<0.05	1.2	-	0.3	0.22	1.9	6.1	1.8	35	150	74		
SWL17-2	22/03/2016	4		0.04	1.3	<0.02	<0.02	<0.05	1.3	-	0.35	0.21	2.1	6.3	1.8	35	110	110		
SWL17-3	22/03/2016	4		0.03	1.2	<0.02	<0.02	<0.05	1.2	-	0.31	0.22	1.8	6.1	1.7	34	200	41		
SWL17-1	14/04/2016	5		0.11	2.9	<0.02	<0.02	-	2.9	2.8	0.11	0.07	3.1	8	1.4	43	74	10		
SWL17-2	14/04/2016	5		0.07	4	<0.02	<0.02	-	4	3.9	0.11	<0.02	3	8.1	1.4	44	20	<10		
SWL17-3	14/04/2016	5		0.16	3.1	<0.02	<0.02	-	3.1	2.9	0.11	0.07	2.9	7.6	1.6	42	430	<10		
SWL17-1	5/05/2016	6		0.04	1.4	<0.02	<0.02	<0.05	1.4	1.4	0.14	<0.05	2.5	6.1	1.4	33	<10	<10		
SWL17-2	5/05/2016	6		0.05	1.3	<0.02	<0.02	<0.05	1.3	1.2	0.07	<0.05	2.5	6.1	1.4	32	<10	<10		
SWL17-3	5/05/2016	6		0.05	1.6	<0.02	<0.02	<0.05	1.6	1.5	0.2	<0.05	2.5	6.3	1.5	33	<10	<10		
SWL17-1	22/06/2016	7		0.14	1.9	<0.02	0.03	<0.05	1.9	1.8	0.17	<0.05	4.6	10	1.7	62	400	250		
SWL17-2	22/06/2016	7		0.1	2.4	0.04	<0.02	<0.05	2.4	2.3	0.2	0.06	6.3	13	1.4	75	640	140		
SWL17-3	22/06/2016	7		0.16	3.3	0.09	0.05	0.14	3.4	3.1	0.43	<0.05	7.1	17	1.3	99	120	30		
SWL17-1	13/07/2016	8		0.08	2	0.03	<0.02	<0.05	2	1.9	0.07	<0.05	4.7	9.6	1.2	72	52	52		
SWL17-2	13/07/2016	8		0.09	1.9	0.03	<0.02	<0.05	1.9	1.8	0.06	<0.05	4.9	9.5	1.4	72	41	41		
SWL17-3	13/07/2016	8		0.09	2.1	0.03	<0.02	<0.05	2.1	2	<0.05	<0.05	4.9	10	1.4	76	31	30		
SWL17_1	15/08/2016	9		0.11	2.3	0.04	<0.02	<0.05	2.2	2.3	<0.05	<0.05	3.6	8.3	1.1	-	390	390		
SWL17_2	15/08/2016	9		0.11	2.3	0.05	<0.02	<0.05	2.2	2.4	<0.05	<0.05	3.6	8.4	1	-	550	360		
SWL17_3	15/08/2016	9		0.11	2.2	0.04	<0.02	<0.05	2.1	2.2	<0.05	<0.05	3.5	8.2	1	-	630	340		
SWL17-1	28/09/2016	10		<0.01	2.4	<0.02	<0.02	<0.05	2.4	2.4	0.1	<0.05	3.3	7.5	1.4	66	63	41		
SWL17-2	28/09/2016	10		<0.01	2.9	<0.02	<0.02	<0.05	2.9	2.9	<0.1	<0.05	3.6	8	1.4	69	63	41		
SWL17-3	28/09/2016	10		0.02	2.5	<0.02	<0.02	<0.05	2.5	2.5	0.1	<0.05	3.5	7.6	1.3	70	31	20		
SWL17-1	26/10/2016	11		0.07	2.3	<0.02	<0.02	<0.05	2.3	2.2	0.1	0.05	2.3	6.8	3.1	42	97	97		
SWL17-2	26/10/2016	11		0.09	2	<0.02	<0.02	<0.05	2	1.9	0.08	0.08	2.1	5.6	1.2	35	660	480		
SWL17-1	28/11/2016	12		0.07	1.3	<0.02	<0.02	<0.05	1.2	1.3	0.1	0.08	1.7	6.3	1.1	36	<10	<10		
SWL17-2	28/11/2016	12		0.05	1.1	<0.02	<0.02	<0.05	1	1.1	0.09	0.07	1.7	5.9	1.1	35	<10	<10		
SWL17-3	28/11/2016	12		0.05	1.2	0.03	<0.02	<0.05	1.1	1.2	0.16	0.07	1.7	6.1	1.2	36	<10	10		
SWL17-1	15/12/2016	13		0.04	0.9	0.03	<0.02	<0.05	0.9	0.9	0.27	0.12	2.3	6.2	36	1.6	-	-		
SWL17-2	15/12/2016	13		0.07	1	<0.02	<0.02	<0.05	0.9	1	0.18	0.11	2.2	6.2	37	1.6	-	-		
SWL17-3	15/12/2016	13		0.05	0.7	<0.02	<0.02	<0.05	0.6	0.7	0.19	0.11	2.2	6.3	37	1.6	-	-		
SWL17-1	19/01/2017	14		0.05	1.9	<0.02	0.03	<0.05	1.9	1.8	0.27	<0.05	1.7	8.1	0.8	36	20	<10		
SWL17-2	19/01/2017	14		0.05	1.6	<0.02	<0.02	<0.05	1.6	1.5	0.25	<0.05	1.6	8	0.8	36	10	<10		
SWL17-3	19/01/2017	14		0.05	1.3	<0.02	<0.02	<0.05	1.3	1.2	0.1	<0.05	1.5	7.8	0.7	35	31	<10		
SWL17-1	21/02/2017	15		<0.01	1.1	<0.02	<0.02	<0.05	1.1	1.1	<0.05	0.34	2.5	8	1.5	41	30	<10		
SWL17-1	16/03/2017	16		0.02	1.1	<0.02	<0.02	<0.05	1.1	1.1	0.14	0.1	2.6	6.4	1.8	39	610	20		
SWL17-1	18/04/2017	17		0.04	0.9	<0.02	<0.02	<0.05	0.9	-	<0.05	0.08	1.8	6.7	1.3	34	<10	<10		
SWL17-2	18/04/2017	17		0.05	0.9	<0.02	<0.02	<0.05	0.9	-	<0.05	0.07	1.8	6.6	1.3	33	<10	<10		
SWL17-3	18/04/2017	17		0.04	0.8	<0.02	<0.02	<0.05	0.8	-	<0.05	0.07	1.8	6.6	1.4	33	<10	<10		

Notes:
NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
SWL = Surface water location
CFU/ml: Colony forming units per millilitre

Investigation Levels:
1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 39
Surface Water Analytical Results
ASS and General Parameters RPD - QA/QC
Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
ENAUPT04483AA
December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Biological		General Parameters				Acid Sulfate Parameters						
				Thermotolerant Coliforms	E. Coli	pH (Lab)	TDS	Turbidity	Electrical conductivity (lab)	Acidity (as CaCO3)	Alkalinity (total) as CaCO3	Alkalinity (Hydroxide) as CaCO3	Alkalinity (Bicarbonate) as CaCO3	Alkalinity (Carbonate) as CaCO3	Sulphate as S	Chloride
Units				mpn/100ML	cfu/100 ml	pH Units	mg/L	NTU	uS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR				1	1	0.01	10	1	1	10	20	1	20	10	5	1
1. ANZECC Lowland				NE	1	6.5 - 8	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. ANZECC FW 95%				NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
3. DER (2015)				NE	NE	Lower-6 Upper-8.5	NE	NE	NE	>40	Lower-60 Upper- > 180	NE	NE	NE	NE	NE
SSM-3	21/12/2015	1		540	8	7.5	370	-	610	<10	74	-	74	<10	6	160
QC16	21/12/2015	1		170	5	7.2	380	-	600	<10	73	-	73	<10	6.3	170
RPD %				104	46	4	3	-	2	#	1	#	1	#	5	6
QC17	21/12/2015	1		-	320	7.56	395	-	-	6	70	<1	70	<1	-	161
RPD %				-	190	1	7	-	-	18	6	-	6	#	-	1
SWL19-1	3/02/2016	2		2400	<10	7.7	2300	-	4100	<10	41	<10	41	<10	28	1100
QC36	3/02/2016	2		93	10	7.7	2300	-	4100	<10	40	<10	40	<10	28	1200
RPD %				185	67	0	0	-	0	#	2	#	2	#	0	9
QC37	3/02/2016	2		-	-	6.95	2240	-	4000	15	65	<10	65	>1	-	1220
RPD %				-	-	10	3	-	2	100	45	#	45	#	-	10
SWL19-2	16/03/2016	4		330	78	7.6	2800	14	4100	<10	-	<10	59	<10	29	1400
QC67	16/03/2016	4		-	-	7.7	2700	-	4100	<10	-	<10	55	<10	31	1300
RPD %				-	-	1	4	-	0	#	#	#	7	#	7	7
QC68	16/03/2016	4		-	-	7.11	2910	-	4530	-	52	<1	52	<1	-	1310
RPD %				-	-	7	4	-	10	-	-	#	13	#	-	7
SWL19-2	16/03/2016	4		330	78	7.6	2800	14	4100	<10	-	<10	59	<10	29	1400
QC67	16/03/2016	4		-	-	7.7	2700	-	4100	<10	-	<10	55	<10	31	1300
RPD %				-	-	1	4	-	0	#	#	#	7	#	7	7
QC68	16/03/2016	4		-	-	7.11	2910	-	4530	-	52	<1	52	<1	-	1310
RPD %				-	-	7	4	-	10	-	-	#	13	#	-	7
SWL19-1	22/06/2016	7		41	<10	6.4	1700	8.4	2900	120	<20	<10	<20	<10	31	830
QC127	22/06/2016	7		20	<10	6.4	1600	6.9	2700	97	<20	<10	<20	<10	26	840
RPD %				69	#	0	6	20	7	21	#	#	#	#	18	1
QC128	22/06/2016	7		-	24	6.61	1660	0.7	2960	6	7	<1	7	<1	-	858
RPD %				-	131	3	2	169	2	181	35	#	35	#	-	3
SWL19-1	24/10/2016	11		10	<10	6.4	1400	<1	2400	<10	<20	<10	<20	<10	40	700
QC214	24/10/2016	11		10	<10	7.3	2300	<1	4100	<10	23	<10	23	<10	40	1300
RPD %				0	#	13	49	#	52	#	79	#	79	#	0	60
QC215	24/10/2016	11		5	5	6.87	2370	0.6	3890	11	19	<1	19	<1	148	1110
RPD %				67	0	7	51	18	47	75	62	#	62	#	115	45
SWL19-1	14/12/2016	13		10	<10	6.4	1400	<1	2400	<10	<20	<10	<20	<10	40	700
QC261	14/12/2016	13		10	<10	7.3	2300	<1	4100	<10	23	<10	23	<10	40	1300
RPD %				0	#	13	49	#	52	#	79	#	79	#	0	60
QC262	14/12/2016	13		5	5	6.87	2370	0.6	3890	11	19	<1	19	<1	148	1110
RPD %				67	164	7	51	18	47	75	62	#	62	#	115	45
SWL19-1	18/01/2017	14		42	5	5.7	2700	6.7	4600	<10	66	<10	66	<10	150	1400
QC281	18/01/2017	14		220	1	5.8	2700	10	4500	11	<20	<10	<20	<10	150	1300
RPD %				136	133	2	0	40	2	75	147	#	147	#	0	7
QC282	18/01/2017	14		-	220	5.83	-	7.7	4620	5	3	<1	3	<1	-	1430
RPD %				-	191	2	-	14	0	0	183	#	183	#	-	2

Notes:

NE = Not Established
mg/L = Milligrams per litre
LOR = Limit of reporting
- = sample not analysed
IL = Investigation level
SWL= Surface water location
µS/cm = Microsiemens per centimetre
NTU = Nephelometric Turbidity Units

Investigation Levels:

1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Table 40
 Surface Water Analytical Results
 Total Dissolved Metals RPD - QA/QC
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 December 2015 to April 2017

Sample ID	Sample Date	Sampling Round	Analyte	Metals Total											Metals Dissolved												
				Aluminium	Arsenic	Cadmium	Chromium	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Zinc	Aluminium (Filtered)	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (Filtered)	Copper (Filtered)	Iron (Filtered)	Lead (Filtered)	Manganese (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Zinc (Filtered)
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
			LOR	0.01	0.001	0.0002	0.001	0.001	0.05	0.001	0.005	0.0001	0.001	0.001	0.001	0.01	0.001	0.0002	-	0.001	0.05	0.001	0.005	0.0001	0.001	0.005	
			1. ANZECC Lowland	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	
			2. ANZECC FW 95%	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008	0.055	0.024	0.0002	NE	0.0014	NE	0.0034	1.9	0.0006	0.011	0.011	0.008
			3. DER (2015)	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	1.00	NE	NE	NE	NE	1	NE	NE	NE	NE	NE	NE	
SSM-3	21/12/2015	1		0.49	0.002	<0.0002	-	0.003	1.2	0.004	-	<0.0001	0.001	<0.001	0.016	0.21	0.001	<0.0002	-	0.001	0.41	<0.001	-	<0.0001	<0.001	<0.001	0.003
QC16	21/12/2015	1		2.8	0.003	<0.0002	-	0.019	2.9	0.019	-	<0.0001	0.003	<0.001	0.096	0.15	0.001	<0.0002	-	<0.001	0.44	<0.001	-	<0.0001	<0.001	<0.001	0.003
			RPD %	140	40	#	-	145	83	130	-	#	100	#	143	33	0	#	-	67	7	#	-	#	#	0	
QC17	21/12/2015	1		1.87	0.002	<0.0001	0.006	0.012	2.34	0.012	0.03	<0.0001	0.002	<0.01	0.06	0.13	0.002	<0.0001	0.001	<0.001	0.48	0.001	0.019	<0.0001	<0.001	<0.01	<0.005
			RPD %	117	0	#	-	120	64	100	-	#	67	#	116	47	67	#	-	67	16	67	-	#	#	#	18
SWL19-1	3/02/2016	2		0.06	<0.001	<0.0001	<0.001	<0.001	0.43	<0.001	0.024	<0.0001	<0.001	<0.001	0.004	<0.05	<0.001	<0.0001	<0.001	<0.001	0.14	<0.001	0.023	<0.0001	<0.001	<0.001	0.002
QC36	3/02/2016	2		0.18	<0.001	<0.0001	<0.001	<0.001	0.4	<0.001	0.024	<0.0001	<0.001	<0.001	0.011	0.1	<0.001	<0.0001	<0.001	<0.001	0.16	<0.001	0.024	<0.0001	<0.001	<0.001	0.011
			RPD %	100	#	#	#	#	7	#	0	#	#	#	93	120	#	#	#	#	13	#	4	#	#	#	138
QC37	3/02/2016	2		0.07	<0.001	<0.0001	<0.001	<0.001	0.43	<0.001	0.023	<0.0001	<0.001	<0.01	<0.005	0.06	<0.001	<0.0001	<0.001	<0.001	0.29	<0.001	0.026	<0.0001	<0.001	<0.01	<0.005
			RPD %	15	#	#	#	#	0	#	4	#	#	#	46	82	#	#	#	#	70	#	12	#	#	#	22
SWL19-2	16/03/2016	4		0.13	<0.001	<0.00005	<0.001	<0.001	1.7	<0.001	0.16	<0.0001	<0.001	<0.001	0.004	0.09	<0.001	<0.00005	<0.001	<0.001	0.39	<0.001	0.14	<0.0001	<0.001	<0.001	0.004
QC67	16/03/2016	4		0.12	<0.001	<0.00005	<0.001	<0.001	1.6	<0.001	0.16	<0.0001	0.001	<0.001	0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	0.42	<0.001	0.15	<0.0001	<0.001	<0.001	0.005
			RPD %	8	#	#	#	#	6	#	0	#	67	#	22	113	#	#	#	#	7	#	7	#	#	#	22
QC68	16/03/2016	4		0.16	<0.001	<0.00005	<0.001	0.002	1.25	<0.001	0.128	<0.0001	<0.001	<0.01	0.011	0.12	<0.001	<0.00005	<0.001	<0.001	0.71	<0.001	0.131	<0.0001	0.001	<0.01	<0.005
			RPD %	21	#	#	#	120	31	#	22	#	#	#	93	29	#	#	#	#	58	#	7	#	67	#	46
SWL19-1	22/06/2016	7		0.13	0.001	<0.0002	<0.001	<0.001	0.53	<0.001	0.012	<0.0001	0.003	<0.001	0.005	0.08	<0.001	<0.0001	<0.001	<0.001	0.06	<0.001	0.011	<0.0001	0.003	<0.001	0.004
QC127	22/06/2016	7		0.09	0.003	<0.0002	<0.001	<0.001	0.44	<0.001	0.012	<0.0001	0.004	<0.001	<0.005	0.09	<0.001	<0.0001	<0.001	<0.001	0.05	<0.001	0.011	<0.0001	0.003	<0.001	0.004
			RPD %	36	100	#	#	#	19	#	0	#	29	#	67	12	#	#	#	#	18	#	0	#	0	#	0
QC128	22/06/2016	7		0.14	0.001	<0.00005	<0.001	<0.001	0.5	<0.001	0.01	<0.0001	0.003	<0.01	0.005	0.07	0.002	<0.00005	<0.001	<0.001	0.08	<0.001	0.009	<0.0001	0.003	<0.01	<0.005
			RPD %	7	0	#	#	#	6	#	18	#	0	#	0	13	#	#	#	#	29	#	20	#	0	#	46
SWL19-1	24/10/2016	11		<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	0.007	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.006	<0.0001	0.002	<0.001	<0.005
QC214	24/10/2016	11		<0.05	<0.001	<0.00005	<0.001	<0.001	0.07	<0.001	0.007	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.007	<0.0001	0.002	<0.001	<0.005
			RPD %	#	#	#	#	#	15	#	0	#	0	#	#	#	#	#	#	#	#	#	15	#	#	#	#
QC215	24/10/2016	11		0.042	0.0002	<0.00005	0.0003	<0.0005	0.107	<0.0001	0.0087	<0.0001	0.0022	<0.0002	0.001	0.036	0.0002	<0.00005	0.0003	<0.0005	0.085	<0.0001	0.0086	<0.0001	0.0021	<0.0002	<0.001
			RPD %	51	86	#	50	#	56	#	22	#	10	#	86	36	86	#	50	#	109	#	36	#	5	#	#
SWL19-1	18/01/2017	14		<0.05	<0.001	<0.00005	<0.001	<0.001	0.05	<0.001	0.042	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.04	<0.0001	0.002	<0.001	<0.005
QC281	18/01/2017	14		<0.05	<0.001	<0.00005	<0.001	<0.001	0.06	<0.001	0.041	<0.0001	0.002	<0.001	<0.005	<0.05	<0.001	<0.00005	<0.001	<0.001	<0.05	<0.001	0.04	<0.0001	0.002	<0.001	<0.005
			RPD %	#	#	#	#	#	18	#	2	#	0	#	#	#	#	#	#	#	#	#	0	#	0	#	#
QC282	18/01/2017	14		0.084	<0.0002	<0.00005	<0.0002	<0.0005	0.155	<0.0001	0.0446	<0.00004	0.0032	<0.0002	0.002	0.062	<0.0002	<0.00005	<0.0002	<0.0005	0.049	<0.0001	0.0428	<0.00004	0.0029	<0.0002	0.002
			RPD %	108	#	#	#	#	102	#	6	#	46	#	22	85	#	#	#	#	65	#	7	#	37	#	22

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 SWL= Surface water location

Investigation Levels:
 1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for SW Australia - Slightly disturbed ecosystems
 2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result Values in highlighted cells exceed nominated IL (1)
 Result Values in highlighted cells exceed nominated IL (2)
 Result Values in highlighted cells exceed nominated IL (3)
 Result Values in highlighted cells exceed laboratory LOR

Table 41
 Surface Water Analytical Results
 Nutrients, Cations, Anions RPD - QA/QC
 Flora and Vegetation – Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Reports
 ENAUPERT04483AA
 December 2015 to April 2017



Sample ID	Sample Date	Sampling Round	Analyte	Nutrients								Major Cations & Anions					
				Ammonia as N	Kjeldahl Nitrogen Total	Nitrate (as N)	Nitrite (as N)	Nitrate & Nitrite (as N)	Nitrogen (Total)	Nitrogen (Organic)	Phosphate total (P)	Reactive Phosphorus as P	Calcium	Magnesium	Potassium	Sodium	
			Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			LOR	0.01	0.1	0.01	0.01	0.01	0.2	0.2	0.05	0.05	0.5	0.5	0.5	0.5	0.5
			1. ANZECC Lowland	NE	NE	NE	NE	0.15	1.2	NE	0.065	0.04	NE	NE	NE	NE	NE
			2. ANZECC FW 95%	0.9	NE	0.7	NE	0.1	1.5	NE	0.06	0.03	NE	NE	NE	NE	NE
			3. DER (2015)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
SSM-3	21/12/2015	1		0.07	1.2	<0.01	<0.01	<0.01	1.2	-	<0.05	<0.05	19	17	7.3	-	-
QC16	21/12/2015	1		0.06	2.1	0.01	<0.01	0.01	1.2	-	<0.05	<0.05	19	17	7.8	-	-
			RPD %	15	55	67	#	67	0	-	#	#	0	0	7	-	-
QC17	21/12/2015	1		<0.01	2	0.01	<0.01	-	2	-	-	<0.01	-	-	-	-	-
			RPD %	173	50	67	#	-	50	-	-	-	-	-	-	-	-
SWL17-2	5/05/2016	6		50	1.3	<0.02	<0.02	<0.05	1.3	1.2	0.07	<0.05	2.5	6.1	1.4	32	-
QC111	5/05/2016	6		60	1.7	<0.02	0.02	<0.05	1.7	1.6	0.17	<0.05	2.5	5.9	1.5	31	-
			RPD %	18	27	#	67	#	27	29	83	#	0	3	7	3	-
QC112	5/05/2016	6		20	2.3	0.02	<0.01	-	2.3	-	-	0.05	-	-	-	-	-
			RPD %	86	56	67	#	-	56	-	-	67	-	-	-	-	-
SWL17-1	13/07/2016	8		0.08	2	0.03	<0.02	<0.05	2	1.9	0.07	<0.05	4.7	9.6	1.2	72	-
QC147	13/07/2016	8		0.11	1.8	0.03	<0.02	<0.05	1.8	1.7	0.09	<0.05	4.7	8.6	1.4	65	-
			RPD %	32	11	0	#	#	11	11	25	#	0	11	15	10	-
QC148	13/07/2016	8		0.03	3.1	0.02	<0.01	-	3.1	-	-	0.03	-	-	-	-	-
			RPD %	91	43	40	#	#	43	#	#	18	#	#	#	#	#

Notes:
 NE = Not Established
 mg/L = Milligrams per litre
 LOR = Limit of reporting
 - = sample not analysed
 IL = Investigation level
 SWL= Surface water location

Investigation Levels:
 1. ANZECC (2000) Lowland River default trigger levels for physical and chemical stressors for S/W Australia - Slightly disturbed ecosystems
 2. ANZECC (2000) Fresh water 95% level protection - Slightly to moderately disturbed ecosystems
 3. DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes

Result	Values in highlighted cells exceed nominated IL (1)
Result	Values in highlighted cells exceed nominated IL (2)
Result	Values in highlighted cells exceed nominated IL (3)
Result	Values in highlighted cells exceed laboratory LOR

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
1	SSM-315/12/2015	QC16	Duplicate	MGT	Thermotolerant Coliforms	104	5
					Kjeldahl Nitrogen Total	55	1
					Nitrate (as N)	67	1
					Nitrate & Nitrite (as N)	67	1
					Nitrogen (Total)	55	2
					Aluminium	140	3
					Arsenic	40	1
					Copper	145	1,3
					Copper (Filtered)	67	4
					Iron	83	1
					Lead	130	1,3
					Nickel	100	1
		Zinc	143	3			
		Ammonia as N	173	4			
		Kjeldahl Nitrogen Total	50	5			
		Nitrate (as N)	67	4			
		Nitrogen (Total)	50	2			
		Aluminium	117	3			
		Aluminium (Filtered)	47	3			
		Arsenic (Filtered)	67	1			
		Copper	120	3			
		Copper (Filtered)	67	4			
		Iron	64	5			
		Lead	100	2			
Lead (Filtered)	67	2					
Nickel	67	1					
Zinc	116	2					
4	SWL19-2	QC67	Duplicate	MGT	Nickel	67	4
					Aluminium (dissolved)	113	4
					Copper	120	4
					Iron	31	5
		QC68	Triplicate	ALS	Zinc	93	2
					Iron (dissolved)	58	5
					Nickel	67	4
					Zinc (dissolved)	46	4
7	SWL19-1	QC127	Duplicate	MGT	Aluminium	32	2
					Nitrite (as N)	67	4
					Phosphate (Total)	83	1, 5
					E Coli	133	4
					Aluminium	43	2
					Iron	32	5
					Aluminium (dissolved)	36	2
					Manganese (dissolved)	86	4
		QC128	Triplicate	ALS	Zinc (dissolved)	86	4
					Ammonia as N	86	5
					Kjeldahl Nitrogen Total	56	5
					Nitrate	67	4
					Nitrogen (total)	56	2
					Reactive Phosphorous	67	4

Explanation Codes:

1. Low analyte concentrations have exaggerated the percentage differences with respect to small total concentration differences. The calculated RPD values are not considered to affect the integrity of the results as both results remain below assessment criteria (where available).
 2. RPD results are above the acceptance limit, with both results also above the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
 3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
 4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
 5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
- * Differences in nutrient concentrations between the primary and secondary laboratories could also be attributed to the different analytical techniques employed by the laboratories for these analyses.

Round	Primary Sample	Sample ID	Duplicate/ Triplicate Sample	Laboratory	Analyte	RPD	Explanation Code
11	SWL19-1	QC214	Dupliucate	MGT	TDS	49	5
					Electrical conductivity *(lab)	52	5
					Alkalinity (total) as CaCO3	79	3
					Alkalinity (Bicarbonate as CaCO3)	79	4
					Chloride	60	5
					Kjeldahl Nitrogen Total	55	1
					Nitrate (as N)	100	4
					Nitrogen (Total)	55	1
					Nitrogen (Organic)	55	1
					Phosphate total (P)	113	4
					Thermotolerant Coliforms	67	5
					TDS	51	5
		Electrical conductivity *(lab)	47	5			
		Acidity (as CaCO3)	75	4			
		Alkalinity (total) as CaCO3	62	3			
		Alkalinity (Bicarbonate as CaCO3)	62	4			
		Sulphate as S	115	5			
		Chloride	45	5			
		Nitrogen (Organic)	195	4			
		Potassium	34	1			
		Total Aluminium	51	4			
		Total Arsenic	86	4			
		Total Chromium	50	4			
		Total Iron	56	1			
Total Zinc	86	4					
Dissolved Aluminium	36	4					
Dissolved Arsenic	86	4					
Dissolved Chromium	50	4					
Dissolved Iron	109	4					
Dissolved Manganese	36	1					
13	SWL19-1	QC261	Duplicate	MGT	TDS	49	2
					Electrical conductivity *(lab)	52	2
					Alkalinity (total) as CaCO3	79	4
					Alkalinity (Bicarbonate as CaCO3)	79	4
		Chloride	60	2			
		Thermotolerant Coliforms	67	2			
		E. Coli	164	4			
		TDS	51	2			
		Electrical conductivity *(lab)	47	2			
		Acidity (as CaCO3)	75	4			
		Alkalinity (total) as CaCO3	62	4			
		Alkalinity (Bicarbonate as CaCO3)	62	4			
Sulphate as S	115	2					
Chloride	45	2					
14	SWL19_1	QC281	Duplicate	MGT	Thermotolerant Coliforms	136	2
					E. Coli	133	2
					Turbidity	40	2
					Acidity (as CaCO3)	75	4
					Alkalinity (total) as CaCO3	147	4
					Alkalinity (Bicarbonate as CaCO3)	147	4
		E. Coli	191	2			
		Alkalinity (total) as CaCO3	183	3			
		Alkalinity (Bicarbonate as CaCO3)	183	3			
		Aluminium	108	4			
		Iron	102	1, 5			
		Aluminium (Filtered)	85	4			
Iron (Filtered)	65	4					
Ammonia as N	120	4					
Kjeldahl Nitrogen Total	181	4					
Nitrate (as N)	164	4					
Nitrogen (Organic)	164	4					

Explanation Codes:

1. Low analyte concentrations have exaggerated the percentage differences with respect to small total concentration differences. The calculated RPD values are not considered to affect the integrity of the results as both results remain below assessment criteria (where available).
 2. RPD results are above the acceptance limit, with both results also above the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
 3. RPD results are above the acceptance limit. Only one sample exceeds the assessment criteria. The variation is not considered to impact the overall assessment as the highest concentration has been utilised in the assessment of the results as a conservative approach.
 4. Sample variation is exaggerated where only one of the sample pair has been detected. In this instance, the variation is not considered to impact the overall assessment as the highest concentration has been utilised as a conservative approach.
 5. RPD results are above the acceptance limit, however both results are less than the assessment criteria (where available). Consequently, any variation is unlikely to affect any conclusions drawn from the investigation and the integrity of the results is maintained.
- * Differences in nutrient concentrations between the primary and secondary laboratories could also be attributed to the different analytical techniques employed by the laboratories for these analyses.



APPENDIX A

Monitoring Locations

Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
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 Monitoring Well Survey Results

Monitoring Well	Easting (MGA94)	Northing (MGA94)	Top of PVC Casing (AHD)	Ground Level (AHD)	Date of Survey
MW1	397403.43	6473775.60	31.58	30.81	1st - 22nd February 2016
MW2	397354.23	6473985.63	30.69	30.01	1st - 22nd February 2016
MW3	397944.97	6474271.66	29.62	29.10	1st - 22nd February 2016
MW4	397648.05	6474627.07	31.99	31.26	1st - 22nd February 2016
MW5	397524.97	6475105.20	31.47	31.08	1st - 22nd February 2016
MW6	397603.50	6475104.40	32.14	31.44	1st - 22nd February 2016
MW10	397843.23	6476618.86	32.44	31.94	1st - 22nd February 2016
MW11	397480.44	6478283.83	37.86	37.07	1st - 22nd February 2016
MW12	397604.47	6478320.37	38.14	37.48	1st - 22nd February 2016
MW26	403257.66	6486269.97	47.78	47.87	1st - 22nd February 2016
MW27	403359.86	6487324.40	48.87	48.92	1st - 22nd February 2016
MW28	403672.05	6487259.73	44.64	44.70	1st - 22nd February 2016
MW29	403438.01	6487716.03	49.53	48.86	1st - 22nd February 2016
MW30	403776.01	6487717.72	48.94	48.31	1st - 22nd February 2016
MW31	403368.74	6489321.38	44.63	43.91	1st - 22nd February 2016
MW32	403456.34	6489353.42	44.28	43.55	1st - 22nd February 2016
MW36	403230.61	6497326.79	48.86	48.12	1st - 22nd February 2016
MW37	403445.58	6497326.65	46.32	45.75	1st - 22nd February 2016
MW38	402986.68	6497636.45	48.69	48.03	1st - 22nd February 2016
NW39	403123.34	6497695.63	48.99	48.29	1st - 22nd February 2016
MW40	402982.66	6499129.43	52.65	-	1st - 22nd February 2016
MW41	403219.14	6499073.55	50.57	49.80	1st - 22nd February 2016
MW42	403082.56	6499796.72	55.36	54.75	1st - 22nd February 2016
MW50	404491.30	6506706.94	49.53	48.84	1st - 22nd February 2016
MW51	404389.73	6506594.04	48.74	48.12	1st - 22nd February 2016
MW52	404118.37	6506614.24	46.91	46.41	1st - 22nd February 2016
MW55	397394.94	6474181.12	32.48	31.97	5 March 2015

Notes:

All locations surveyed by P G S Hope and Partners Pty Ltd
 "-" = Not recorded
 AHD = Australia Height Datum
 MGA = Map Grid of Australia
 PVC = Polyvinyl Chloride

**Inland Water Environmental Quality – Hydrological Processes – Baseline Survey Report
 ENAUPERT04483AA
 Surface Water Co-ordinates**

Surface Water Location	Easting (MGA94)	Northing (MGA94)
SWL1-1	395899	6473520
SWL1-2	396062	6473640
SWL1-3	396390	6473540
SWL2-1	397383	6474020
SWL2-2	397441	6474020
SWL2-3	397434	6473960
SWL3-1	397825	6474160
SWL3-2	397917	6474250
SWL3-3	397814	6474240
SWL4-1	397595	6475200
SWL4-2	397708	6475160
SWL4-3	397819	6475120
SWL5-1	398122	6476660
SWL5-2	398400	6476540
SWL5-3	398725	6476640
SWL6-1	397312	6478350
SWL6-2	397861	6478300
SWL6-3	398036	6478260
SWL7-1	396685	6479620
SWL7-2	396737	6479460
SWL7-3	396797	6479310
SWL8-1	402090	6485830
SWL8-2	402269	6485890
SWL8-3	402122	6485690
SWL9-1	402720	6486200
SWL9-2	402836	6486280
SWL9-3	402916	6486070
SWL10-1	403063	6486440
SWL10-2	403081	6486600
SWL10-3	403133	6486790
SWL11-1	403061	6487360
SWL11-2	403303	6487280
SWL11-3	403270	6487400
SWL12-1	403728	6487210
SWL12-2	403912	6487270
SWL12-3	403889	6487030
SWL13-1	403289	6488490
SWL13-2	403144	6488380
SWL13-3	403038	6488530
SWL14-1	403575	6489230
SWL14-2	403574	6489310
SWL14-3	403599	6489370
SW15-1	403218	6491350
SW15-2	403239	6491320
SWL16-1	403125	6497560
SWL16-2	403075	6497640
SWL16-3	402976	6497670
SWL17-1	402953	6499120
SWL17-2	402962	6499120
SWL17-3	402949	6499120

Notes:

All locations were obtained using a Garmin GPSmap 62s
 MGA = Map Grid of Australia



APPENDIX B

Sampling Program Strategy

1 APPROACH

In order to establish a comprehensive and robust sampling strategy, a tiered review and planning approach has been adopted. The tiered approach ensures environmental issues are appropriately considered in the baseline scope development. Key considerations include:

1. Relevant environmental policies, strategies and criteria.
2. Relevant environmental attributes, values and issues of concern.
3. Known environment impact and disturbances from the proposed development.
4. Development of sampling location matrix.

Further detail around each of the above key aspects is provided in the following sections.

2 ENVIRONMENTAL POLICIES, STRATEGIES AND CRITERIA

Relevant guidance was reviewed to establish regulatory management requirements associated with the protection and prevention of environmental features identified in previous studies. The following guidelines are relevant to establishing overarching requirements for the pre-construction baseline ground and surface water assessment:

- The Environmental Protection Authority's (EPA) objectives for hydrological processes and inland waters environmental quality:
 - To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.
 - To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.
- *Environmental Guidance for Planning and Development, Guidance Statement No. 33* (EPA, 2008) sets out wetlands that are of high conservation significance and require a high level of protection, the following of which are particularly relevant to this proposal:
 - CCWs as identified on Department of Environment and Conservation (DEC)s Geomorphic Wetlands Swan Coastal Plain dataset.
 - Wetlands protected under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 (EPP lakes).
 - Wetlands in Perth's Bush Forever sites (Government of Western Australia, 2000b, and updates).
 - Wetlands with significant vegetation, significant flora or habitat that supports significant fauna as accepted by the EPA, for example, TECs, Declared Rare Flora (Threatened flora) and specially protected fauna.

Guidance Statement No. 33 also states a minimum of 50 m buffer distance to maintain ecological processes (EPA 2008).

- *Western Australian Planning Commission (WAPC 2005) Guideline for the Determination of Wetland Buffer Requirements* discusses the recommended separation and/or management distances for category wetlands CCW, REW and MUWs).
- The Department of Water's (DOW) *Better Urban Water Management Guidance Note 7 Managing the hydrology and hydrogeology of water dependent ecosystems in urban development* (DOW, 2008) guideline sets out requirements in undertaking pre- and post-development assessment of water dependant ecosystem to ensure the ecological health of water dependent ecosystems is maintained.


Additionally, consideration has been given to the following guidelines in order to select appropriate monitoring locations and methods for the baseline sampling program:

- Treatment and management of soil and water in acid sulfate soil landscapes (DER, 2015).
- Assessment and management of contaminated sites (DER, 2014).
- Water quality monitoring program design. A guideline for field sampling for surface water quality monitoring programs (DOW, 2009).

3 POTENTIAL ENVIRONMENT IMPACTS

The next phase in developing the sampling methodology involved understanding and taking into consideration potential impacts that will or may occur during the construction process as follows:

- Threatened ecological communities (TECs) present partially within or close to the proposal footprint including:
 - Mound Springs of the Swan Coastal Plain TEC (Mound Springs TEC) – proposal footprint traverses through several buffer zones.
 - The critically endangered Claypans of the Swan Coastal Plain TEC – near to proposal footprint.
 - Several CCWs partially within or close to highway development footprint.
 - Several EPP lakes adjacent to the proposal footprint.
 - The Gngangara groundwater mound and associated Wellhead Protection Zones (WHPZs) around Water Corporation bores.
 - Two major surface water features including Ellen Brook and its catchment and the Bennett Brook catchment.
 - Locations where habitat modification is proposed through clearing causing increased sediment loading and increased turbidity within wetlands during construction (stormwater and drainage discharges).
 - Consideration given to fragmentation of hydraulic connectivity.
 - Locations where ASS may be present and may be potentially disturbed.
 - Lowering of groundwater table due to dewatering or groundwater abstraction creating ASS disturbance and contamination.
 - Lowering of groundwater levels due to potential dewatering and/or groundwater abstraction which may impact on groundwater dependant ecosystems (GDEs).
-

- 
- Potential for diminished water quality within wetlands in future where wetlands are fragmented and/or buffer zones reduced (e.g. changes to levels of nutrient, organic compounds, suspended solids, toxic compounds and salinity).

4 DEVELOPMENT OF SAMPLING LOCATION MATRIX

The guidelines, environmental values and potential impacts identified in the above sections were used as a basis for establishing sampling locations. The following criteria were established and a matrix developed in order to determine the locations for groundwater wells and surface water monitoring:

- EPP Lakes located within and in close proximity to the proposal footprint.
 - TECs located near to or down hydraulic gradient of construction footprint.
 - CCWs and REWs within the proposal footprint (i.e. will be partially cleared or connectivity fragmented).
 - CCWs where the recommended 100 m buffer from the proposal footprint may not be maintained.
 - CCWs within Priority 1 (P1) or Priority 3 (P3) PDWSA.
 - Consideration of general construction activities within P1 and P2 PDWSA.
 - Areas of high and moderate ASS risk.
 - Areas where dewatering may occur during construction.
 - Consideration given to potential radius of groundwater cone of depression during dewatering (i.e. limit radius to < 100 m as recommended within DER's *Treatment and management of soil and water in acid sulfate soil landscapes guidelines* (DER, 2015)).
-

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Baseline survey location ID	Easting (MGA94)	Northing (MGA94)	Group	Comment	Closest Wetland ID	Conservation category	Public drinking water source area	Vegetation condition	Hydrogeological domain	Drainage zone	Preliminary ASS classification
MW1	397,403.43	6,473,775.60	Aquatic Ecosystem	Located down hydraulic gradient of Reid/Tonkin Highway interchange. Reference monitoring location site allow for assessment of off-site background water quality assessment in this general area. Also down hydraulic gradient of potential dewatering location.	N/A	CCW	N/A	N/A	1	Urban zone	N/A
MW2	397,354.23	6,473,985.63	Aquatic Ecosystem	Dewatering location, proposed infiltration basin location.	15028	CCW	No	Pristine to Good	1	Urban zone	High
MW3	397,944.97	6,474,271.66	Aquatic Ecosystem	Near to dewatering location, proposed infiltration basin location.	8447	MUW	No	Excellent to completely degraded	1	Urban zone	High
MW4	397,648.05	6,474,627.07	Aquatic Ecosystem	Located adjacent (north) of CCW 15033 and proposed basin/drain.	15033	CCW	No	Excellent to Very Good	1	Urban zone	High
MW5/MW6	397,524.97	6,475,105.20	Aquatic Ecosystem	Located near to proposed infiltration basin, Bennett Brook tributary	15757	REW	No	Very Good to Completely Degraded	1	P1 zone	High
	397,603.50	6,475,104.40	Aquatic Ecosystem								
MW7	397,653.63	6,476,117.07	GUWPCA	Located adjacent to well head protection zone and proposed basin/drain location	15029	MUW	Priority 1	Degraded to completely degraded	1	P1 zone	High
MW8	397,303.65	6,476,598.35	GUWPCA	Located down hydraulic gradient of MW9			Priority 3				
MW9	397,358.88	6,476,745.25	GUWPCA	Located near to proposed infiltration basin.			Priority 1				
MW10	397,843.23	6,476,618.86	Aquatic Ecosystem	Located adjacent to CCW, within wellhead protection zone	8416	CCW	Priority 1	Good	1	P1 zone	High
MW11/MW12	397,480.44	6,478,283.83	Aquatic Ecosystem	Located within CCW, within wellhead protection zone	15260/8404	CCW	Priority 1	Excellent to Very Good	1	P1 zone	High
	397,604.47	6,478,320.37	Aquatic Ecosystem								
MW13	397,149.65	6,479,329.86	GUWPCA	Located adjacent to proposed infiltration basin location and CCW, within wellhead protection zone.	15260	CCW	Priority 1	Excellent to Very Good	1	P1 zone	High
MW14/MW15	397,457.02	6,479,577.12	GUWPCA	Monitoring wells located within P1 drinking water source area.	N/A	N/A	Priority 1	N/A	1	P1 zone	Moderate
	397224.18	6479718.26	GUWPCA								Moderate
MW16	396683.56	6481670.62	GUWPCA								Moderate
MW17	396657.42	6481767.28	GUWPCA								Moderate
MW18	398747.63	6481670.43	Aquatic Ecosystem								Moderate
MW19	398349.33	6481955.31	GUWPCA								Moderate
	399108.16	6482370.53	GUWPCA								Moderate
MW20/MW21	399171.27	6482221.4	GUWPCA	Monitoring wells located within P1 drinking water source area. Wells located up and down hydraulic gradient of proposed infiltration basin.						Moderate	
MW22	400256.75	6484262.37	Aquatic Ecosystem	Monitoring wells located within P1 drinking water source area. Adjacent to proposed infiltration basin.	8541	REW	Priority 1	Very good	1	P1 zone	High
MW23	401218.79	6484155.13	GUWPCA	Located between P1 drinking area. Adjacent to proposed infiltration basin. Up hydraulic gradient of wellhead protection zone	N/A	N/A	N/A	Completely degraded	1	P1 zone	Moderate
MW24	402551.96	6485614.59	GUWPCA		N/A	N/A	N/A	Excellent to Very Good	1	P1 zone	Moderate

Baseline survey location ID	Easting (MGA94)	Northing (MGA94)	Group	Comment	Closest Wetland ID	Conservation category	Public drinking water source area	Vegetation condition	Hydrogeological domain	Drainage zone	Preliminary ASS classification
MW25	402584.88	6485572.76	GUWPCA	Located within Mound Springs SCP TEC (2km buffer). Adjacent to proposed infiltration basin location. CCW likely < recommended 100 m buffer from the proposal footprint.	N/A	N/A	N/A	Excellent to Very good -- critical habitat Caladenia hugelii	1	P1 zone	Moderate
MW26	403257.66	6486269.97	Aquatic Ecosystem		8792	CCW	No	Very Good - critical habitat Caladenia hugelii	1	P1 zone	High
					8802	CCW	No		1	P1 zone	High
MW27	403359.86	6487324.4	Aquatic Ecosystem		8812	CCW	No	Excellent - critical habitat Caladenia hugelii	1	P1 zone	Moderate
MW28	403672.05	6487259.73	Aquatic Ecosystem	Located within Maralla Road Class A Nature Reserve, up hydraulic gradient of CCW within the reserve.	N/A	N/A	No	Pristine to excellent - critical habitat Caladenia hugelii	1	P1 zone	Moderate
MW29	403438.01	6487716.03	Aquatic Ecosystem	Reference monitoring location site allow for assessment of water quality up hydraulic gradient of CCW.	N/A	N/A	No	Excellent. Located within SCP21c Priority 3 threatened and endangered ecological community buffer and within Muchea limestone, endangered buffer.	1	P1 zone	High
MW30	403776.01	6487717.72	Aquatic Ecosystem						1	P1 zone	High
MW31	403368.74	6489321.38	Aquatic Ecosystem	Sample location within CCW 8926. CCW 8296 is directly adjacent to the proposal footprint, i.e. where the recommended 100 m buffer from the proposal footprint will not be maintained.	8926	CCW	No	Unknown	2	Palusplain	Moderate
MW32	403456.34	6489353.42	Aquatic Ecosystem								
MW33	403437.97	6492367.63	Aquatic Ecosystem	Located surrounding potential dewatering location.	15732	MUW	No	Completely degraded	2	Palusplain	High/Moderate
MW34	403591.83	6492489.29	Aquatic Ecosystem								
MW35	403390.35	6492855.11	Aquatic Ecosystem								
MW36	403230.61	6497326.79	Aquatic Ecosystem	Located within Mound Springs SCP TEC (2km buffer)	15732	MUW	No	Good to Completely Degraded	2	Palusplain	High/Moderate
MW37	403445.58	6497326.65	Aquatic Ecosystem								High/Moderate
MW38	402986.68	6497636.45	Aquatic Ecosystem								High
MW39	403123.34	6497695.63	Aquatic Ecosystem								Up hydraulic gradient of CCW. Tributary feeding into Ellen Brook.

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Baseline survey location ID	Easting (MGA94)	Northing (MGA94)	Group	Comment	Closest Wetland ID	Conservation category	Public drinking water source area	Vegetation condition	Hydrogeological domain	Drainage zone	Preliminary ASS classification
MW40	402982.66	6499129.43	Aquatic Ecosystem	Located within Mound Springs SCP TEC (2km buffer). Proposal footprint crosses through MUW 15732.	15732	MUW	No	Very good to good	2	Palusplain	Moderate
MW41	403219.14	6499073.55	Aquatic Ecosystem					Moderate			
MW42	403082.56	6499796.72	Aquatic Ecosystem					Completely degraded			Moderate
MW43	404113.51	6502688.03	Aquatic Ecosystem	Up hydraulic gradient of dewatering location.	15732	MUW	No	Completely degraded	3	Palusplain	Moderate
MW44	404287.56	6502704.39	Aquatic Ecosystem	Located between road reserve and Ellen Brook.	15732	MUW					Moderate
MW45	404589.79	6503165.78	Aquatic Ecosystem	Located between road reserve and Ellen Brook.	15732	MUW					Moderate
MW46	404572.03	6503654.43	Aquatic Ecosystem	Located adjacent to Ellen Brook.	15732	MUW					Low
MW47	404627.02	6503387.82	Aquatic Ecosystem	Located between road reserve and Ellen Brook. Located near to proposed dewatering location.	15732	MUW					Low
MW48	404557.27	6504243.39	Aquatic Ecosystem	Located adjacent to Ellen Brook and up hydraulic gradient of location where proposed road envelope crosses over Ellen Brook and potential dewatering location.	15732	MUW	No	Completely degraded	3	Palusplain	Moderate/low
MW49	404730.01	6504231.51	Aquatic Ecosystem	As above.							Moderate/low
MW50	404491.3	6506706.94	Aquatic Ecosystem	Located along small tributary which drains into SCP critically endangered claypan.	15732	MUW	No	Degraded to completely degraded	3	Palusplain	Moderate
MW51	404389.73	6506594.04	Aquatic Ecosystem								
MW52	404118.37	6506614.24	Aquatic Ecosystem								
MW53	403770.41	6506965.58	Aquatic Ecosystem	Located adjacent to tributary which flows into Ellen Brook. Near to proposed dewatering location.	15732	MUW	No	Degraded	3	Palusplain	Moderate
MW54	403487.22	6507032.25	Aquatic Ecosystem		15732	MUW	No				



APPENDIX C

Groundwater Monitoring Well Logs

Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW1**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

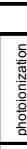
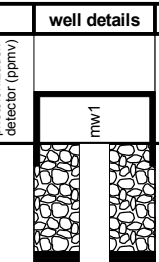
date started: **20 Jan 2016**

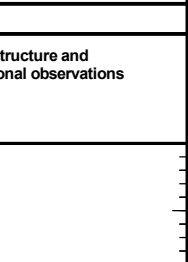
date completed: **20 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 397403; N: 6473776 (MGA94) surface elevation: 30.81 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance				structure and additional observations		
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	
HA CASING 20/01/16				0.0		SP	TOPSOIL: black, No odour present. Mulch SAND: fine grained, pale black, No odour present.	D	L	FILL
				1.0		SW	SAND: fine to coarse grained, yellow, No odour present.	D	L	
				2.0		SW	SAND: medium to coarse grained, white, No odour present.	D	L	
				3.0		SW	SAND: medium to coarse grained, pale grey, No odour present.	M	L	
				4.0		SW	SAND: medium to coarse grained, pale grey, No odour present.	W	L	
				7.60			Monitoring Well MW1 terminated at 7.60 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.8m: Cuttings 0.8-1.1m: Bentonite 1.1-7.6m: Gravel standpipe piezo. mw1 details: stickup: 0.3m 1.6-7.6m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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CDF_0_9_06_LIBRARY_GLB_rev:AU Log COF PIEZOMETER: ENVIRONMENTAL_ENAUPERT04483AA-MERGED.GPJ <-DrawingFile> 09/10/2017 12:47

Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW2**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

date started: **04 Jan 2016**

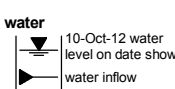
date completed: **04 Jan 2016**

logged by: **Wesley Alport**

checked by: **Shane Healey**

position: E: 397354; N: 6473986 (MGA94) surface elevation: 30.01 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 04/01/16						SW	SAND: medium to coarse grained, grey / olive, No odour present.	D	L	
				1.0		SW	SAND: fine to medium grained, grey, No odour present.	M	L	
				2.0		SP	SAND (COFFEE ROCK): fine to medium grained, poorly graded, dark brown, weakly cemented, iron staining.	W	L	
				3.0						
				4.0						
				5.0			Monitoring Well MW2 terminated at 4.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.5m: Cuttings 0.5-1.0m: Bentonite 1.0-4.5m: Gravel standpipe piezo. MW2 details: stickup: 0.4m 1.3-4.3m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL loose L very loose MD medium dense D dense VD very dense
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CDF_0_9_06_LIBRARY.GLB rev:AU Log COF PIEZOMETER: ENVIRONMENTAL ENAUPERT04483AA-MERGED.GPJ <-DrawingFile> 09/10/2017 12:47

Environmental Log - Monitoring Well

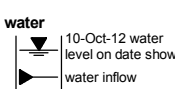
client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW3**
 sheet: 1 of 1
 project no: **ENAUPERT04483AA**
 date started: **04 Jan 2016**
 date completed: **04 Jan 2016**
 logged by: **Wesley Alport**
 checked by: **Shane Healey**

position: E: 397945; N: 6474272 (MGA94) surface elevation: 29.10 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 04/01/16				0.0			SILTY SAND: fine to medium grained, grey, No odour present. SAND: fine to medium grained, yellow, No odour present.	D	L	COFFEE ROCK WC
				1.0			SILTY SAND: medium grained, black, No odour present. Some organic peats	M	L	
				2.0		SP	SAND (COFFEE ROCK): fine to medium grained, poorly graded, dark brown, weakly cemented, iron staining.	W	L	
				4.0			Monitoring Well MW3 terminated at 4.00 m Target depth Cap lodged at bottom of well.			

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method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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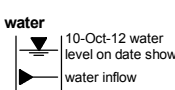
Environmental Log - Monitoring Well

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW4**
 sheet: 1 of 1
 project no: **ENAUPERT04483AA**
 date started: **04 Jan 2016**
 date completed: **04 Jan 2016**
 logged by: **Wesley Alport**
 checked by: **Shane Healey**

position: E: 397648; N: 6474627 (MGA94) surface elevation: 31.26 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 04/01/16			MW4	0.0		SM	SILTY SAND: fine grained, poorly graded, sub-angular, grey, No odour present.	D	L	some organic matter
				0.5		SP	SAND: medium grained, well graded, sub-angular, yellow / brown, No odour present.	M	L	
				1.0		SP	SAND: fine to medium grained, well graded, sub-angular, dark brown, Some silt, No odour present.	M	L	
				2.0		SP	SAND: fine to medium grained, well graded, sub-angular, olive, Some silt, No odour present.	M	L	
				4.0		SP	SAND (COFFEE ROCK): fine to medium grained, poorly graded, dark brown, weakly cemented, iron staining.	W	L	COFFEE ROCK WC
5.0				Monitoring Well MW4 terminated at 5.00 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-1.0m: Cuttings 1.0-1.5m: Bentonite 1.5-5.0m: Gravel standpipe MW4 details: stickup: 0.5m 2.0-5.0m: screen			

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW5**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

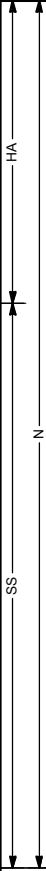

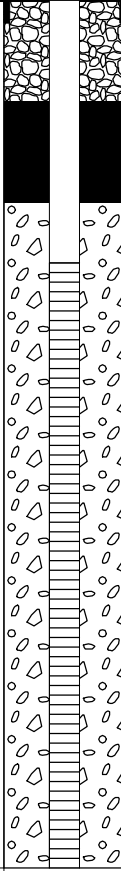


date started: **04 Jan 2016**

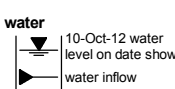


date completed: **04 Jan 2016**

logged by: **Wesley Alport**

checked by: **Shane Healey**

position: E: 397525; N: 6475105 (MGA94) surface elevation: 31.08 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
				0.0 - 1.0		SW	No Recovery - Vacc Drilling SILTY SAND: fine to medium grained, well graded, pale grey.	D	L	COFFEE ROCK WC
				1.0 - 4.3		SP	SAND (COFFEE ROCK): fine to medium grained, poorly graded, dark brown, weakly cemented, iron staining.	W	L	
				4.3 - 5.0	Monitoring Well MW5 terminated at 4.30 m Target depth Cap lodged at bottom of well.				well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.5m: Cuttings 0.5-1.0m: Bentonite 1.0-4.3m: Gravel standpipe piezo. MW5 details: stickup: 0.4m 1.3-4.3m: screen	

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown  water inflow  water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW6**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

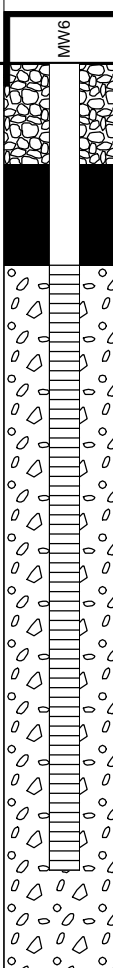
date started: **04 Jan 2016**

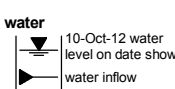
date completed: **04 Jan 2016**

logged by: **Wesley Alport**

checked by: **Shane Healey**

position: E: 397604; N: 6475104 (MGA94) surface elevation: 31.44 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance					structure and additional observations	
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	
HA N SS				0.0	SP	SP	Woodchips, No odour present.	D	L	COFFEE ROCK WC
				0.5	SM	SM	SAND: fine grained, well graded, sub-angular, cream, No odour present.	D	L	
				1.0	GW	GW	SILTY SAND: fine to medium grained, poorly graded, sub-angular, grey, No odour present. GRAVEL: orange, No odour present.	D to M	L	
				2.0	SW	SW	SAND: medium to coarse grained, well graded, sub-rounded, grey, No odour present.	W	L	
				3.0	SP	SP	SAND (COFFEE ROCK): fine to medium grained, poorly graded, dark brown, weakly cemented, No odour present, iron staining.	W	L	
4.5							Monitoring Well MW6 terminated at 4.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.5m: Cuttings 0.5-1.0m: Bentonite 1.0-4.5m: Gravel standpipe piezo. MW6 details: stickup: 0.3m 1.0-4.0m: screen
5.0										

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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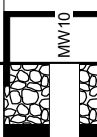





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Environmental Log - Monitoring Well

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW10**
 sheet: 1 of 1
 project no: **ENAUPERT04483AA**
 date started: **05 Jan 2016**
 date completed: **05 Jan 2016**
 logged by: **Wesley Alport**
 checked by: **Shane Healey**

position: E: 397843; N: 6476619 (MGA94) surface elevation: 31.94 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS	05/01/16			0.0		SW	SAND: medium to coarse grained, well graded, sub-angular, grey, No odour present.	M	L	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.4m: Cuttings 0.4-0.6m: Bentonite 0.6-3.9m: Gravel 3.9-6.0m: Cuttings standpipe piezo. MW10 details: stickup: 0.4m 0.9-3.9m: screen
				1.0		SW	SAND: medium grained, well graded, sub-angular, white, No odour present.	M becoming W	L	
				2.0		SW	SAND: fine to medium grained, well graded, sub-angular, grading to pale brown, No odour present.	W	L	
				2.5		SW	SAND: fine to medium grained, well graded, sub-angular, brown, with some silt, No odour present.	W	L	
				3.0		SW	SAND: fine to medium grained, well graded, sub-angular, brown, No odour present.	W	L	
				4.0		SW	SAND: fine to medium grained, well graded, sub-angular, brown, No odour present.	W	L	
6.0				6.0			Monitoring Well MW10 terminated at 6.00 m Target depth Cap lodged at bottom of well.			
				7.0						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown  water inflow  water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW11**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **05 Jan 2016**

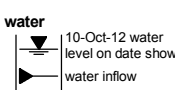
date completed: **05 Jan 2016**

logged by: **Wesley Alport**

checked by: **Shane Healey**

position: E: 397480; N: 6478284 (MGA94) surface elevation: 37.07 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 05/01/16				0.0		SW	TOPSOIL: SILTY SAND: fine grained, sub-angular, grey, No odour present.	D	L	Roots and oramic matter.
				1.0		SW	SAND: fine to medium grained, sub-angular, grading to white, No odour present.	D	L	
				2.0		SW	SILTY SAND: fine to medium grained, sub-angular, pale brown, No odour present.	M	L	
				3.0		SW	SAND: fine to medium grained, sub-angular, brown, No odour present.	M to W	L	
				7.0			Monitoring Well MW11 terminated at 6.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-3.0m: Cuttings 3.0-3.25m: Bentonite 3.25-6.5m: Gravel standpipe piezo. MW11 details: stickup: 0.4m 3.0-6.0m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix * e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID. **MW12**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

date started: **05 Jan 2016**




date completed: **05 Jan 2016**

logged by: **Wesley Alport**

checked by: **Shane Healey**

position: E: 397604; N: 6478320 (MGA94) surface elevation: 37.48 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 05/01/16				0.0		SW	TOPSOIL: SILTY SAND: fine grained, sub-angular, grey, No odour present.	D	L	Roots and organic matter.
				1.0		SW	SAND: fine to medium grained, sub-angular, grading to white, No odour present.	D	L	
				2.0		SW	SILTY SAND: fine to medium grained, sub-angular, pale brown, No odour present.	M	L	
				3.0		SW	SAND: fine to medium grained, sub-angular, brown, No odour present.	M	L	
				4.0						
				5.0						
				6.0						
				7.0			Monitoring Well MW12 terminated at 6.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-3.0m: Cuttings 3.0-3.25m: Bentonite 3.25-6.5m: Gravel standpipe piezo. MW12 details: stickup: 0.3m 3.5-6.5m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix * e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown  water inflow  water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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CDF_0_9_06_LIBRARY/GLB rev:AU Log COF PIEZOMETER: ENVIRONMENTAL ENAUPERT04483AA-MERGED.GPJ <-DrawingFile> 09/10/2017 12:47

Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW26**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **13 Jan 2016**

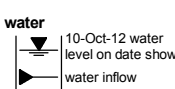
date completed: **13 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403258; N: 6486270 (MGA94) surface elevation: 47.87 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 13/01/16				0.0		SP	TOPSOIL: SAND: fine grained, very pale grey, No odour present.	D	VL	
				0.5		SP	SAND: fine grained, white, No odour present.	D	VL	
				4.0		SW	SAND: medium to coarse grained, very pale brown, No odour present.	D	L	
				5.0		SW	SAND: medium to coarse grained, pale brown, No odour present.	M	L	
				6.0		SW	SAND: medium to coarse grained, brown, No odour present.	W	L	
				7.7			Monitoring Well MW26 terminated at 7.70 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.2m: Concrete 0.2-3.7m: Cuttings 3.7-4.2m: Bentonite 4.2-7.7m: Gravel standpipe piezo. MW26 details: stickup: 0.0m 4.7-7.7m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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CDF_0_9_06_LIBRARY\GLB revv:AU Log COF PIEZOMETER: ENVIRONMENTAL ENAUPERT04483AA-MERGED.GPJ <-DrawingFile> 09/10/2017 12:48

Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW27**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

date started: **13 Jan 2016**

date completed: **13 Jan 2016**

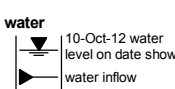
logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403360; N: 6487324 (MGA94) surface elevation: 48.92 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance				structure and additional observations	
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density
HA N SS 13001/16				0.0		SP	TOPSOIL: SAND: fine grained, white, No odour present.	D	VL
				0.0 - 2.8		SW	SAND: medium to coarse grained, white, No odour present.	D	VL
				2.8 - 3.2		SW	SAND: medium to coarse grained, grey, No odour present.	M	L
				3.2 - 6.7		SW	SAND: medium to coarse grained, grey, No odour present.	W	L
				6.7			Monitoring Well MW27 terminated at 6.70 m Target depth Cap lodged at bottom of well.		

well details:
 drilling company: Strataprobe
 driller: John Metcalfe
backfill details:
 0.0-0.2m: Concrete
 0.2-2.8m: Cuttings
 2.8-3.2m: Bentonite
 3.2-6.7m: Gravel
standpipe piezo. MW27 details:
 stickup: 0.0m
 3.7-6.7m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID. **MW28**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

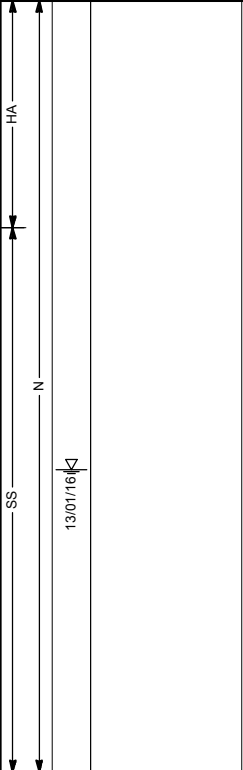
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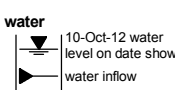
date completed: **13 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403672; N: 6487260 (MGA94) surface elevation: 44.70 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
				0.0		SP	TOPSOIL: SAND: fine grained, off grey, No odour present.	D	VL	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.2m: Concrete 0.2-1.0m: Cuttings 1.0-1.5m: Bentonite 1.5-5.1m: Gravel standpipe piezo. MW28 details: stickup: 0.0m 2.1-5.1m: screen
				1.0		SP	SAND: fine grained, white, No odour present.	D	VL	
				2.0		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				3.0		SW	SAND: medium to coarse grained, white, No odour present.	W	L	
				4.0						
				5.0						
				6.0			Monitoring Well MW28 terminated at 5.10 m Target depth Cap lodged at bottom of well.			
				7.0						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW29**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

date started: **14 Jan 2016**

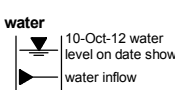
date completed: **14 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403438; N: 6487716 (MGA94) surface elevation: 48.86 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 13/01/16				0.0		SP	TOPSOIL: SAND: fine grained, grey, No odour present.	D	VL	
				0.0 - 2.0		SP	SAND: fine grained, white, No odour present.	D	VL	
				2.0 - 2.5		SW	SAND: medium to coarse grained, pale grey, No odour present.	M	L	
				2.5 - 6.0		SW	SAND: medium to coarse grained, brown, No odour present.	W	L	
				6.01			Monitoring Well MW29 terminated at 6.01 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-2.0m: Cuttings 2.0-2.5m: Bentonite 2.5-6.0m: Gravel standpipe piezo. MW29 details: stickup: 0.6m 3.0-6.0m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW30**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **14 Jan 2016**

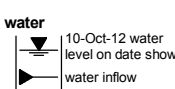
date completed: **14 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403776; N: 6487718 (MGA94) surface elevation: 48.31 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 14/01/16				0.0		SP	TOPSOIL: SAND: fine grained, very pale black, No odour present.	D	VL	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-4.5m: Cuttings 4.5-5.0m: Bentonite 5.0-8.5m: Gravel standpipe piezo. MW30 details: stickup: 0.3m 5.5-8.5m: screen
				1.0		SW	SAND: medium to coarse grained, white, No odour present.	D	VL	
				2.0						
				3.0						
				4.0						
				5.0						
				6.0		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
			7.0		SW	SAND: medium to coarse grained, white, No odour present.	W	L		
			8.0							
			9.0				Monitoring Well MW30 terminated at 8.50 m Target depth Cap lodged at bottom of well.			
			10.0							

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW31**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **14 Jan 2016**

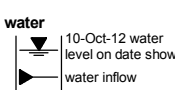
date completed: **14 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403369; N: 6489321 (MGA94) surface elevation: 43.91 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS 13/01/16				0.0		SP	TOPSOIL: SAND: fine grained, white, No odour present.	D	VL	
				0.5		SW	SAND: fine to coarse grained, white, No odour present.	D	VL	
				1.5		SW	SAND: fine to coarse grained, grey, No odour present.	M	L	
				2.0		SW	SAND: fine to coarse grained, grey, No odour present.	W	L	
				3.6			Monitoring Well MW31 terminated at 3.60 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.25m: Bentonite 0.25-3.6m: Gravel standpipe piezo. mw31 details: stickup: 0.4m 0.6-3.6m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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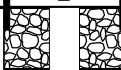

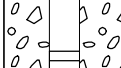
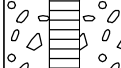
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


Environmental Log - Monitoring Well

Hole ID. **MW32**
 sheet: 1 of 1
 project no. **ENAUPERT04483AA**
 date started: **14 Jan 2016**
 date completed: **14 Jan 2016**
 logged by: **Christopher Jowsey**
 checked by: **Shane Healey**

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

position: E: 403456; N: 6489353 (MGA94) surface elevation: 43.55 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS	13/01/16			0.0		SP	TOPSOIL: SAND: fine grained, white, No odour present.	D	VL	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.3m: Cuttings 0.3-0.6m: Bentonite 0.6-4.0m: Gravel standpipe piezo. MW32 details: stickup: 0.3m 1.0-4.0m: screen
				0.3		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				1.0		SW	SAND: medium to coarse grained, grey, No odour present.	M	L	
				2.0		SW	SAND: medium to coarse grained, grey, No odour present.	W	L	
				4.0			Monitoring Well MW32 terminated at 4.00 m Target depth Cap lodged at bottom of well.			
				5.0						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown  water inflow  water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID. **MW36**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

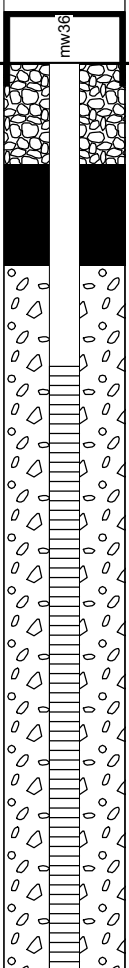

date started: **15 Jan 2016**

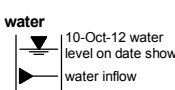
date completed: **15 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403231; N: 6497327 (MGA94) surface elevation: 48.12 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
				1.0	SW	SW	SAND: medium to coarse grained, white, No odour present.	D	L	
				2.0	SW	SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				3.0	SW	SW	SAND: medium to coarse grained, white, No odour present.	W	L	
				4.0						
				5.0			Monitoring Well MW36 terminated at 4.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.5m: Cuttings 0.5-1.0m: Bentonite 1.0-4.5m: Gravel standpipe piezo. mw36 details: stickup: 0.4m 1.5-4.5m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL loose L very loose MD loose D medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW37**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **15 Jan 2016**

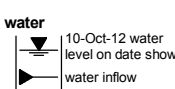
date completed: **15 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403446; N: 6497327 (MGA94) surface elevation: 45.75 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS	1501/16			0.0		SW	SAND: medium to coarse grained, white, No odour present.	D	L	
				1.0		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				1.5		SW	SAND: medium to coarse grained, brown, No odour present.	W	L	
				3.5			Monitoring Well MW37 terminated at 3.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.3m: Bentonite 0.3-3.5m: Gravel standpipe piezo. mw37 details: stickup: 0.4m 0.5-3.5m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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CDF_0_9_06_LIBRARY\GLB revv:AU Log COF PIEZOMETER: ENVIRONMENTAL ENAUPERT04483AA-MERGED.GPJ <-DrawingFile> 09/10/2017 12:48

Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW38**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **19 Jan 2016**

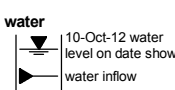
date completed: **19 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 402987; N: 6497636 (MGA94) surface elevation: 48.03 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA 19/01/16 N SS				0.0		SP	TOPSOIL: SAND: fine grained, black, No odour present.	D	L	
				0.5		SW	SAND: coarse to coarse grained, black, No odour present.	M	L	
				1.0		SW	SAND: coarse to coarse grained, black, No odour present.	W	L	
				1.5						
				2.0						
				2.5						
				3.0						
				3.5						
				4.0						
				4.5						
				3.5			Monitoring Well MW38 terminated at 3.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.3m: Bentonite 0.3-3.5m: Gravel standpipe piezo. mw38 details: stickup: 0.4m 0.5-3.5m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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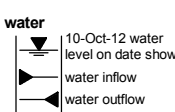
Environmental Log - Monitoring Well

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW39**
 sheet: 1 of 1
 project no: **ENAUPERT04483AA**
 date started: **19 Jan 2016**
 date completed: **19 Jan 2016**
 logged by: **Christopher Jowsey**
 checked by: **Shane Healey**

position: E: 403123; N: 6497696 (MGA94) surface elevation: 48.29 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA 19/01/16 N SS				0.0		SP	TOPSOIL: SAND: fine grained, brown, No odour present.	D	L	
				0.5		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				1.0		SW	SAND: medium to coarse grained, grey, No odour present.	W	L	
				1.5						
				2.0						
				2.5						
				3.0						
				3.5			Monitoring Well MW39 terminated at 3.30 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.15m: Bentonite 0.15-3.3m: Gravel standpipe piezo. mw39 details: stickup: 0.4m 0.3-3.3m: screen
				4.0						
				4.5						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

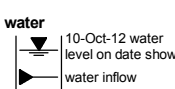
Hole ID: **MW40**
 sheet: 1 of 1
 project no: **ENAUPERT04483AA**
 date started: **15 Jan 2016**
 date completed: **15 Jan 2016**
 logged by: **Christopher Jowsey**
 checked by: **Shane Healey**

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

position: E: 402983; N: 6499129 (MGA94) surface elevation: Not Specified angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS	15/01/16			0.0	SP	SP	TOPSOIL: SAND: fine grained, grey, No odour present.	D	L	
				0.5	SW	SW	SAND: medium to coarse grained, brown, No odour present.	M	L	
				1.5	SW	SW	SAND: medium to coarse grained, brown, No odour present.	W	L	
				3.4			Monitoring Well MW40 terminated at 3.40 m Target depth Cap lodged at bottom of well.			

well details:
 drilling company: Strataprobe
 driller: John Metcalfe
backfill details:
 0.0-0.2m: Bentonite
 0.2-3.4m: Gravel
standpipe piezo. mw40 details:
 stickup: 0.4m
 0.4-3.4m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID. **MW41**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

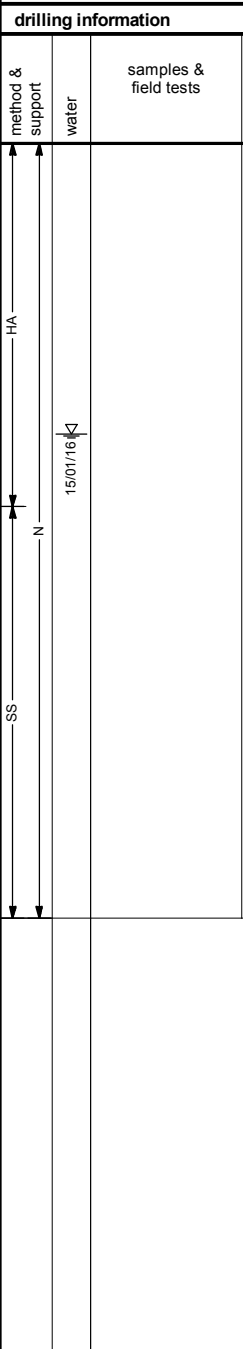
date started: **15 Jan 2016**

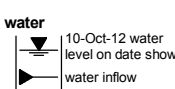
date completed: **15 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 403219; N: 6499074 (MGA94) surface elevation: 49.80 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
				0.0		SP	TOPSOIL: SAND: fine grained, brown, No odour present.	D	L	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.1m: Bentonite 0.1-3.2m: Gravel standpipe piezo. mw41 details: stickup: 0.3m 0.2-3.2m: screen
				0.5		SW	SAND: medium to coarse grained, brown, No odour present.	M	L	
				1.0		SW	SAND: medium to coarse grained, brown, No odour present.	W	L	
				1.5						
				2.0						
				2.5						
				3.0						
				3.5			Monitoring Well MW41 terminated at 3.20 m Target depth Cap lodged at bottom of well.			
				4.0						
				4.5						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nill water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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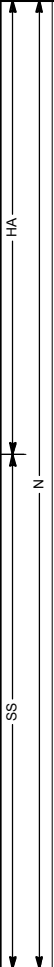


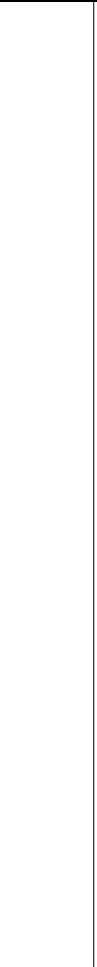
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Environmental Log - Monitoring Well

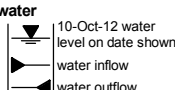
Hole ID. **MW42**
 sheet: 1 of 1
 project no. **ENAUPERT04483AA**
 date started: **15 Jan 2016**
 date completed: **15 Jan 2016**
 logged by: **Christopher Jowsey**
 checked by: **Shane Healey**

client: **Main Roads WA**
 principal: **Coffey**
 project: **Perth to Darwin National Highway**
 location: **Northlink Baseline Groundwater Monitoring**

position: E: 403083; N: 6499797 (MGA94) surface elevation: 54.75 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance				structure and additional observations	
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density
				0.0		SP	TOPSOIL: SAND: fine grained, grey to very pale black, No odour present.	D	VL
				0.2		SW-SM	SILTY SAND: fine to medium grained, brown, No odour present.	M	L
				0.4		SW-SM	SILTY SAND: fine to medium grained, brown, No odour present.	W	L
				3.20			Monitoring Well MW42 terminated at 3.20 m Target depth Cap lodged at bottom of well.		
				3.5					

well details:
 drilling company: Strataprobe
 driller: John Metcalfe
backfill details:
 0.0-3.2m: Gravel
standpipe piezo. MW42 details:
 stickup: 0.4m
 0.2-3.2m: screen

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nill water 	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW50**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

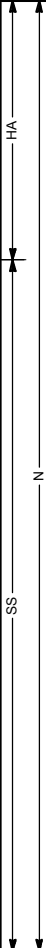






date started: **19 Jan 2016**

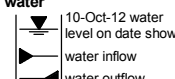
date completed: **19 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 404491; N: 6506707 (MGA94) surface elevation: 48.84 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
				0.0		SP	TOPSOIL: SAND: fine grained, black, No odour present.	D	L	well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-1.5m: Cuttings 1.5-2.0m: Bentonite 2.0-5.5m: Gravel standpipe piezo. mw50 details: stickup: 0.3m 2.5-5.5m: screen
				1.0		SW	SAND: medium to coarse grained, white, No odour present.	D	L	
				2.0		SW-SC	CLAYEY SAND: fine to coarse grained, very pale olive, No odour present.	D	MD	
				3.0		SW-SC	CLAYEY SAND: fine to coarse grained, very pale olive, No odour present.	M	MD	
				4.0		SW-SC	CLAYEY SAND: fine to coarse grained, very pale olive, No odour present.	W	MD	
				5.0			Monitoring Well MW50 terminated at 5.50 m Target depth Cap lodged at bottom of well.			
				6.0						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nill water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW51**

sheet: 1 of 1

project no: **ENAUPERT04483AA**

date started: **19 Jan 2016**

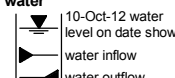
date completed: **19 Jan 2016**

logged by: **Christopher jowsey**

checked by: **shane healey**

position: E: 404390; N: 6506594 (MGA94) surface elevation: 48.12 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance					structure and additional observations	
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	
HA 19/01/16 N SS				0.0		SP	SAND: fine grained, black, No odour present.	D	L	
				0.5		SW	SAND: medium to coarse grained, white, No odour present.	M	L	
				1.0		SW	SAND: medium to coarse grained, white, No odour present.	W	L	
				1.5						
				2.0						
				2.5						
				3.0		SW-SC	SAND: fine to coarse grained, very pale green, No odour present.	W	F	
				3.5			Monitoring Well MW51 terminated at 3.50 m Target depth Cap lodged at bottom of well.			well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.15m: Bentonite 0.15-3.5m: Gravel standpipe piezo. mw51 details: stickup: 0.4m 0.5-3.5m: screen
				4.0						
				4.5						

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown water inflow water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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Environmental Log - Monitoring Well

client: **Main Roads WA**

principal: **Coffey**

project: **Perth to Darwin National Highway**

location: **Northlink Baseline Groundwater Monitoring**

Hole ID: **MW52**

sheet: 1 of 1

project no. **ENAUPERT04483AA**

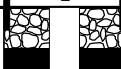

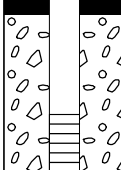
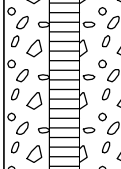
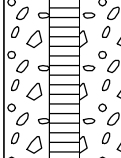
date started: **19 Jan 2016**




date completed: **19 Jan 2016**

logged by: **Christopher Jowsey**

checked by: **Shane Healey**

position: E: 404118; N: 6506614 (MGA94) surface elevation: 46.41 m (AHD) angle from horizontal: 90°
 equipment type: Sonic Rig, Tractor mounted drilling fluid: N/A hole diameter : 70 mm

drilling information		well details		material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA N SS	19/01/16			0.0		SP	TOPSOIL: SAND: fine grained, black, No odour present.	D	L	
				0.2		SW	SAND: medium to coarse grained, white, No odour present.	D	L	
				1.8		SW-SC	CLAYEY SAND: fine to coarse grained, pale brown, No odour present.	M	F	
				2.0		SW-SC	CLAYEY SAND: fine to coarse grained, pale brown, No odour present.	W	F	
				4.0		SW-SC	Sandy CLAY: fine to coarse plasticity, off olive, No odour present.	W	F	
				4.2	Monitoring Well MW52 terminated at 4.20 m Target depth Cap lodged at bottom of well.		well details: drilling company: Strataprobe driller: John Metcalfe backfill details: 0.0-0.2m: Cuttings 0.2-0.7m: Bentonite 0.7-4.2m: Gravel standpipe piezo. mw52 details: stickup: 0.4m 1.2-4.2m: screen			

method AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore DHH downhole hammer SS hand auger solid stem flight auger bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	support M mud C casing N nil water  10-Oct-12 water level on date shown  water inflow  water outflow	samples & field tests ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	classification symbol & soil description based on Unified Classification System moisture D dry M moist W wet Wp plastic limit Wl liquid limit	consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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APPENDIX D

Calibration Certificates

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	pH	pH	/	<input type="checkbox"/>
Conductivity	12,880 uS/cm	uS/cm	uS/cm		<input type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	% in Sodium Sulphite	% Saturation in Air		<input type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	mV		<input type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature _____ °C
 Electrodes Cleaned and checked

Tag No: 009638

Valid to: 12/2/16

Date: 9th DEC, 2015

Signed: _____

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>9</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: <u>403092</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car-charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmartROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 9/12/15

Signed: _____

TFS Reference	<u>CP000898</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART-25</u>	Condition on return:	
Equipment Serial No.			

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Tel: +61 8 9328 2900
fax: +61 8 9328 2677
eco@ecoenvironmental.com.au
www.ecoenvironmental.com.au
214 Lord St Perth WA 6000

Equipment Information

Instrument: GPP1 - Geotech Peristaltic Pump
Serial Number #D07000971

Equipment Check

	Enclosed	Returned	Comment
GeoPump Controller	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Geotech 12v Battery & Charger	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Carry Case	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Power Supply Cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Car Battery Adapter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Inspection Details

	Pass	Fail	Comment
De-con wash of controller & cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
De-con wash of battery & carry case	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Inspection for faults, corrosion and damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Unit in good working order, clean and ready for use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

This is to certify that where possible, this instrument has been cleaned in accordance with the manufacturer's general maintenance procedure as recommended in the instrument service manual.

Regards

EM
2-12-15

Equipment Specialist
ECO Environmental

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	2385 / 8861	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm	23851	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air	A2034	<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV	0100121	<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 22/1/2016

Signed: AP

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>2.1m</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 22/1/2016

Signed: AP

TFS Reference	<u>CP0818</u>	Return Date:	<u> / /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART DEMO</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295	Fax: (Free Call) 1800 675 123	Email: RentalsAU@Thermofisher.com
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	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.01 pH	MK1401/ML2075	<input checked="" type="checkbox"/>
Conductivity	2760 uS/cm	2762 uS/cm	uS/cm	NA1731	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0 % in Sodium Sulphite	100.0 % Saturation in Air	3527	<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	232 mV	NB2029/NB2031	<input checked="" type="checkbox"/>

- Battery Status > 80%
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 23.2 °C
 Electrodes Cleaned and checked

Tag No: TFNO34

Valid to: 14/3/16

Date: 21/1/16

Signed: NBrenn

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>1.5</u> m length + <u>9.1m cable</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Low Energy Radio Serial #: <u>366481</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vented cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carry Case
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 21/1/16

Signed: NBrenn

TFS Reference	<u>CPO00914</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-14</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: _____

Signed: _____

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)
<input type="checkbox"/>	<input type="checkbox"/>	_____

Date: 11/3/16

Signed: AD

TFS Reference	<u>CPO818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-14</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 11/3/16

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____ m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 11/3/16

Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmartTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 %	100 %		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
- Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 22 °C
- Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 6/4/2016

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmartROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 6/4/16

Signed: AD

TFS Reference	<u>CPO818</u>	Return Date:	<u>- / - / -</u>
Customer Reference		Return Time:	<u>12:00</u>
Equipment ID	<u>SMART-14</u>	Condition on return:	<u>TBA</u>
Equipment Serial No.			

RENTALS

Equipment Certification Report – In-situ SmartRoll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4	7	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413	12830		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0	100		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	in Sodium Sulphite 240mV +/- 10%	Saturation in Air 240		<input checked="" type="checkbox"/>

Battery Status _____ °C
 Electrical Safety Tag attached (AS/NZS 3760)
 Temperature 22 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 6/4/2016

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____ m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmartROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 6/4/16
 Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	<u>- / - / -</u>
Customer Reference		Return Time:	<u>12:00</u>
Equipment ID	<u>SMART-14</u>	Condition on return:	<u>TBA</u>
Equipment Serial No.			

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Melbourne Branch 5 Corben Drive Scoresby 3179 Issue 2	Sydney Branch 12000 Sydney Road North Ryde 2113	Adelaide Branch 1111 North Road South Australia 5087	Brisbane Branch Unit 23 Tron St Newstead 4006	Perth Branch 121 Berngara Ave Malpas WA 6050
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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 %	100 %		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
- Electrical Safety Tag attached (AS/NZS 3760)

Tag No: _____
 Valid to: _____
 Date: 6/4/16
 Signed: AD

- Temperature 22 °C
- Electrodes Cleaned and checked

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 6/4/16
 Signed: AD

TFS Reference	<u>C90818</u>	Return Date:	<u>- / - / -</u>
Customer Reference		Return Time:	<u>12:00</u>
Equipment ID	<u>SMART-28</u>	Condition on return:	<u>TBA</u>
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295 Fax: (Free Call) 1800 675 123 Email: RentalsAU@ThermoFisher.com

RENTALS

Equipment Certification Report – In-situ SmartTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 29/4/16

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmartTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: _____

Signed: _____

TFS Reference	<u>U0818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	SMART <u>14</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@Thermofisher.com	
Melbourne Branch 5 Caribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 29/4/16

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____ m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 29/4/16

Signed: AD

TFS Reference	<u>C P0818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART 16</u>	Condition on return:	
Equipment Serial No.			

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Melbourne Branch 5 Carribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 17/6/16

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 17/6/16

Signed: AD

TFS Reference	<u>CPO818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-14</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@Thermofisher.com	
Melbourne Branch 5 Canbbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Nonwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	

RENTALS

Equipment Certification Report – In-situ SmartRoll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4	7	/	<input checked="" type="checkbox"/>
Conductivity	12,880 us/cm	12880	1413		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0	100		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240		<input checked="" type="checkbox"/>

Battery Status Tag attached (AS/NZS 3760) Temperature °C **21**
 Electrical Safety Tag attached (AS/NZS 3760) Electrodes Cleaned and checked

Tag No: _____
Valid to: _____

Date: 17/6/16
Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Item	Returned	Sent
!Pod Touch 5 with waterproof casing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
pH sensor/Redox (ORP) sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conductivity/TDS sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Dissolved oxygen sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Red caps for probe and Bluetooth battery pack	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Connector cable _____ m	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bluetooth Battery Pack Serial #: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Spare 4 AA batteries	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AC charger with USB cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Car charger with USB cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Instruction Manual	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Quick Guide	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Calibration cup with vented cap and sponge	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Storage cap with sponge	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SS Protective Shroud	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SmartROLL MP Flow Cell	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Check to confirm electrical safety (tag must be valid)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Date: 17/6/16
Signed: AD

TFS Reference	<u>C0818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

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Melbourne Branch 5 Canberra Drive, Scoresby 3179	Sydney Branch Level 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Newstead 4006	Perth Branch 121 Bergara Ave Malaga WA 6090
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Phone: (Free Call) 1300 735 295 Fax: (Free Call) 1800 675 123 Email: RentalsAU@Thermofisher.com

RENTALS

Equipment Certification Report – In-situ Smartroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7	4	/	<input checked="" type="checkbox"/>
Conductivity	12,880 us/cm	12880	148		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0	100		<input checked="" type="checkbox"/>
Redox * (ORP)	Electrode operability test	240mV +/- 10%	240		<input checked="" type="checkbox"/>

Battery Status Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____
Valid to: _____

Date: 11/2/16
Signed: AO

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Item	Returned	Sent
<input checked="" type="checkbox"/> iPod Touch 5 with waterproof casing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> pH sensor/Redox (ORP) sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Conductivity/TDS sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dissolved oxygen sensor	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Red caps for probe and Bluetooth battery pack	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Connector cable _____ m	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Bluetooth Battery Pack Serial #: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Spare 4 AA batteries	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> AC charger with USB cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Car charger with USB cable	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Instruction Manual	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Quick Guide	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Calibration cup with vented cap and sponge	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Storage cap with sponge	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> SS Protective Shroud	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> SmartROLL MP Flow Cell	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Check to confirm electrical safety (tag must be valid)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Date: 11/2/16
Signed: AO

TFS Reference	Customer Reference	Equipment ID	Equipment Serial No.
080818		SMART-16	
Return Date: / /	Return Time:	Condition on return:	

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Melbourne Branch 5 Carbean Drive, Scoresby 3179 Phone: (Free Call) 1300 735 295	Sydney Branch Level 1, 4 Tabavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Bengara Ave Malaga WA 6090
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Fax: (Free Call) 1800 675 123 Email: RentalsAU@ThermoFisher.com

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 11/7/16

Signed: AS

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 11/7/16

Signed: AS

TFS Reference	<u>C90818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

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Melbourne Branch 5 Caribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 12/8

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 12/8

Signed: AD

TFS Reference	<u>C80818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART 28</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@ThermoFisher.com	
Melbourne Branch 5 Caribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newslead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	G0845

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	143 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 19/9

Signed: [Signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: _____

Signed: _____

TFS Reference	<u>CPO818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

"We do more than give you great equipment... We give you great solutions!"

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Melbourne Branch 5 Caribbean Drive, Scoresby 3179	Sydney Branch Level 1, 4 Talavera Road, North Ryde 2113	Adelaide Branch 27 Beulah Road, Norwood, South Australia 5067	Brisbane Branch Unit 2/5 Ross St Newstead 4006	Perth Branch 121 Beringarra Ave Malaga WA 6090	

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	1	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 30/09

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 30/09

Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	<u> / /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART 16</u>	Condition on return:	
Equipment Serial No.			

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EQUIPMENT INFORMATION

Instrument: GPP1 - Geotech Peristaltic Pump

Serial Number: D07000971

Equipment Check

	Enclosed	Returned	Comment
GeoPump Controller	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Geotech 12v Battery & Charger	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Carry Case	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Power Supply Cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Car Battery Adapter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Inspection Details

	Pass	Fail	Comment
De-con wash of controller & cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
De-con wash of battery & carry case	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Inspection for faults, corrosion and damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Unit in good working order, clean & ready for use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

This is to certify that where possible this instrument has been cleaned in accordance with the manufacture's general maintenance procedure as recommended in the instrument service manual.

ECO Standard Rental Terms & Conditions apply to all equipment calibrations.

Regards,

E. Murdoch

Equipment Specialist
ECO Environmental

Date: 07.09.2016

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 22/9

Signed: [Signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 22/9

Signed: [Signature]

TFS Reference	<u>CPO818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART-29</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	1	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

 Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 21/10

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 21/10

Signed: AD

TFS Reference	<u>CROSBIE</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART -28</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	1	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 21/10

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 21/10

Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	<u> / /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART - 21</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	290 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 21/11

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____ m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 21/11

Signed: AD

TFS Reference	<u>C00818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART-16</u>	Condition on return:	
Equipment Serial No.			

RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 21/11

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 21/11

Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	4 pH	7 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 12/12/16

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 12/12/16

Signed: AD

TFS Reference	<u>CP0818</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART 16</u>	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	N11803	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	uS/cm	uS/cm	N12084	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10% <input checked="" type="checkbox"/>	240 mV	7760	<input checked="" type="checkbox"/>

- Battery Status Full
 Electrical Safety Tag attached (AS/NZS 3760)

- Temperature 23.2 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 12/1/17

Signed: DR

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>10m</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: <u>341166</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 12/1/17

Signed: DR

TFS Reference	<u>C5006100</u>	Return Date:	<u>/ /</u>
Customer Reference	<u>2464</u>	Return Time:	
Equipment ID	<u>SMARTMA</u>	Condition on return:	
Equipment Serial No.	<u>402683</u>		

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

 Temperature 25 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 14/2/17

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 14/2/17

Signed: AD

TFS Reference	<u>C90818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	SMART	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@ThermoFisher.com	
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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	/	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12880 uS/cm	1413 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 25 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 14/2/17

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable _____m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)
<input type="checkbox"/>	<input type="checkbox"/>	_____

Date: 14/2/17

Signed: AD

TFS Reference	<u>C90818</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	SMART	Condition on return:	
Equipment Serial No.			

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RENTALS

Equipment Certification Report – In-situ SmartRoll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	1	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

Battery Status _____
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 21 °C
 Electrodes Cleaned and checked

Tag No: TT081856

Valid to: _____

Date: 9/3/17

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>1.2</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmartROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 9/3/17

Signed: AD

TFS Reference	<u>CPO01372</u>	Return Date:	<u>1 / 1</u>
Customer Reference		Return Time:	<u>12:00</u>
Equipment ID	<u>SMART - 16</u>	Condition on return:	<u>TBA</u>
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@Thermofisher.com	
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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7 pH	4 pH	1	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	1413 uS/cm	12880 uS/cm		<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0 % in Sodium Sulphite	100 % Saturation in Air		<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	240 mV		<input checked="" type="checkbox"/>

- Battery Status _____ Temperature 21 °C
 Electrical Safety Tag attached (AS/NZS 3760) Electrodes Cleaned and checked

Tag No: TT081856

Valid to: 12/3/17

Date: 9/3/2017

Signed: AD

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>10</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)
<input type="checkbox"/>	<input type="checkbox"/>	_____

Date: 9/3/2017

Signed: AD

TFS Reference	<u>C001372</u>	Return Date:	<u>/ /</u>
Customer Reference		Return Time:	
Equipment ID	<u>SMART-28</u>	Condition on return:	
Equipment Serial No.			

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Phone: (Free Call) 1300 735 295		Fax: (Free Call) 1800 675 123		Email: RentalsAU@Thermofisher.com	
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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.19 pH	4.82 pH	298530 / 295226	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12396 uS/cm	uS/cm	N12084	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	% in Sodium Sulphite	91.1 % Saturation in Air	3527	<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10% <input checked="" type="checkbox"/>	217.5 mV	1112	<input checked="" type="checkbox"/>

Battery Status Full
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 23.0 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 7/4/17

Signed: DR

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>10</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: <u>341166</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 7/4/17

Signed: [Signature]

TFS Reference	<u>Coffey - Towsey</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART-16</u>	Condition on return:	
Equipment Serial No.	<u>402683</u>		

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RENTALS

Equipment Certification Report – In-situ SmarTroll Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.11 pH	4.14 pH	292530 / 295226	<input checked="" type="checkbox"/>
Conductivity	12,880 uS/cm	12711 uS/cm		N12084	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.6 % in Sodium Sulphite	97.1 % Saturation in Air	3527	<input checked="" type="checkbox"/>
Redox (ORP) *	Electrode operability test	240mV +/- 10%	226.9 mV	1112	<input checked="" type="checkbox"/>

Battery Status Full
 Electrical Safety Tag attached (AS/NZS 3760)

Temperature 22.9 °C
 Electrodes Cleaned and checked

Tag No: _____

Valid to: _____

Date: 7/4/17

Signed: DR

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum \$30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
<input checked="" type="checkbox"/>	<input type="checkbox"/>	iPod Touch 5 with waterproof casing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	pH sensor/Redox (ORP) sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductivity/TDS sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dissolved oxygen sensor
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Red caps for probe and Bluetooth battery pack
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Connector cable <u>10</u> m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluetooth Battery Pack Serial #: <u>449905</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spare 4 AA batteries
<input checked="" type="checkbox"/>	<input type="checkbox"/>	AC charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Car charger with USB cable
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Instruction Manual
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quick Guide
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Calibration cup with vented cap and sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Storage cap with sponge
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SS Protective Shroud
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SmarTROLL MP Flow Cell
<input type="checkbox"/>	<input type="checkbox"/>	Check to confirm electrical safety (tag must be valid)

Date: 2/4/17

Signed: [Signature]

TFS Reference	<u>Cobbay - Dowsey</u>	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	<u>SMART - 28</u>	Condition on return:	
Equipment Serial No.	<u>339016</u>		



APPENDIX E

Field Tests SOP

HI 3811 Alkalinity Test Kit



Dear Customer,

Thank you for choosing a Hanna Product. Please read the instructions carefully before using the chemical test kit. It will provide you with the necessary information for correct use of the kit.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

Each kit is supplied with:

- Phenolphthalein Indicator, 1 bottle (10 mL) with dropper;
- Bromophenol Blue Indicator, 1 bottle (10 mL) with dropper;
- HI 3811-0, 1 bottle (120 mL);
- 2 calibrated vessels (10 and 50 mL);
- 1 calibrated syringe with tip.

Note: Any damaged or defective item must be returned in its original packing materials.

SPECIFICATIONS

Range	0 to 100 mg/L (ppm) CaCO ₃ 0 to 300 mg/L (ppm) CaCO ₃
Smallest Increment	1 mg/L [in the 0-100 mg/L range] 3 mg/L [in the 0-300 mg/L range]
Analysis Method	Acid titration using phenolphthalein and bromophenol blue
Sample Size	5 mL and 15 mL
Number of Tests	110 (average)
Case Dimensions	200x120x60 mm (7.9x4.7x2.4")
Shipping Weight	460 g (17.2 oz.)

ISTR3811RS 07/05

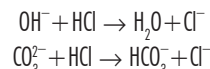
SIGNIFICANCE AND USE

Alkalinity is the quantitative capacity of a water sample to neutralize an acid to a set pH. This measurement is very important in determining the corrosive characteristics of water due primarily to hydroxide, carbonate and bicarbonate ions. Other sources of alkalinity can be from anions that can be hydrolyzed such as phosphates, silicates, borates, fluoride and salts of some organic acids. Alkalinity is critical in the treatments of drinking water, wastewater, boiler & cooling systems and soils. The Hanna Alkalinity Test Kit makes monitoring easy, quick and safe. The compact size gives the user the versatility to use the kit anywhere. The design makes the kit easy to handle and, except for HI 3811-0, practically prevents accidental injury or damage due to spills.

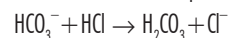
Note: mg/L is equivalent to ppm (parts per million).

CHEMICAL REACTION

Alkalinity can be measured as Phenolphthalein Alkalinity and Total Alkalinity. The Phenolphthalein Alkalinity is determined by neutralizing the sample to a pH of 8.3 using a dilute hydrochloric acid solution, and a phenolphthalein indicator. This process converts hydroxide ions to water, and carbonate ions to bicarbonate ions:



Since bicarbonate ions can be converted to carbonic acid with additional hydrochloric acid, the Phenolphthalein Alkalinity measures total hydroxide ions, but only half of the bicarbonate contribution. To completely convert the carbonate ions, hydrochloric acid is added until the sample's pH is 4.5:



This is known as Total Alkalinity.

INSTRUCTIONS

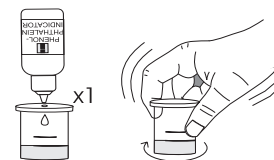
READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT
LOOK AT THE BACK PAGE FOR THE ILLUSTRATED PROCEDURE

Determination of Phenolphthalein Alkalinity

- Remove the cap from the small plastic vessel. Rinse the plastic vessel with water sample, fill to the 5 mL mark and replace the cap.



- Add 1 drop of Phenolphthalein indicator through the cap port, and mix carefully swirling the vessel in tight circles. If the solution remains colorless, record the phenolphthalein alkalinity as zero, and proceed with the procedure for the determination of Total Alkalinity (see below). If the solution is pink or red, proceed to next step.



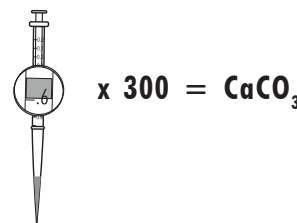
- Take the titration syringe and push plunger completely into the syringe. Insert tip into HI 3811-0 solution and pull plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.



- Place syringe tip into the cap port of the plastic vessel and slowly add the titration solution dropwise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel turns colorless.

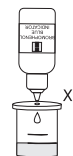
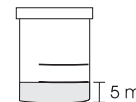


- Read off the milliliters of titration solution from the syringe scale, and multiply by 300 to obtain mg/L (ppm) CaCO₃.



Determination of Total Alkalinity

- Remove the cap from the plastic vessel. Rinse the plastic vessel with water sample, fill to the 5 mL mark and replace the cap.
- Through the cap port, add 1 drop of Bromophenol blue indicator and mix. If the solution is yellow, then it is



acidic and an acidity test must be carried out (see HI 3820 — Hanna Acidity Test Kit). If the solution is green or blue, then proceed to next step.

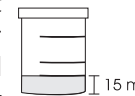
- Take the titration syringe and push the plunger completely into the syringe. Insert the tip into HI 3811-0, and pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.
- Place the syringe tip into the cap port of the plastic vessel and slowly add the titration solution dropwise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel turns yellow.
- Read off the milliliters of titration solution from the syringe scale and multiply by 300 to obtain mg/L (ppm) CaCO₃.



Low Range Determinations

If results are lower than 100 mg/L, the precision of the test can be improved as follows.

- Remove the cap from the large plastic vessel. Rinse the vessel with water sample, fill to the 15 mL mark and replace the cap. Proceed with the test as described before. To obtain the result for both Phenolphthalein and Total Alkalinity multiply the values on the syringe scale by 100.



Note: Push and twist pipet tip onto tapered end of syringe ensuring an air-tight fit.



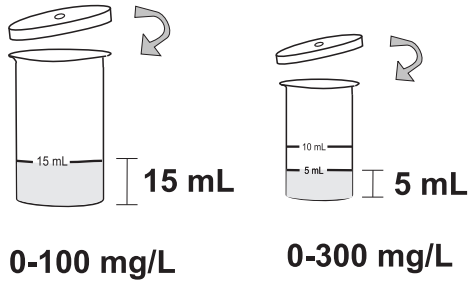
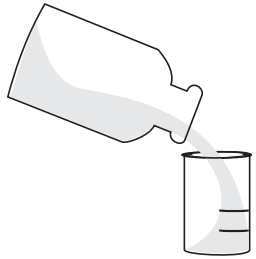
REFERENCES

1987 Annual Book of ASTM Standard, Volume 11.01 Water (1), pages 151-158.
Official Methods of Analysis, A.O.A.C., 14th Edition, 1984.
Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992, pages 445-446.

HEALTH AND SAFETY

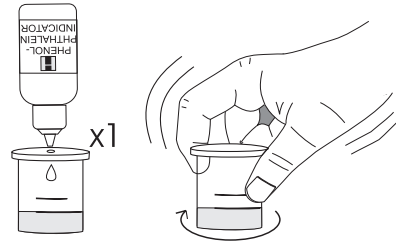
The chemicals contained in this test kit may be hazardous if improperly handled. Read Health and Safety Data Sheets before performing the test.

1



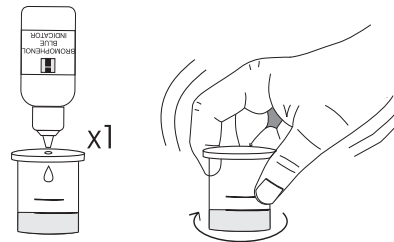
**PHENOLPHTHALEIN
ALKALINITY**

2P

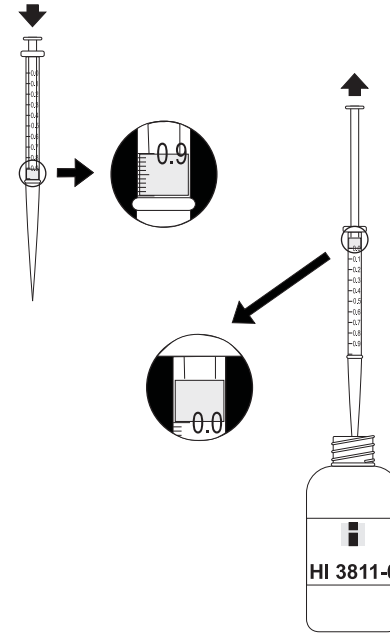


**TOTAL
ALKALINITY**

2T

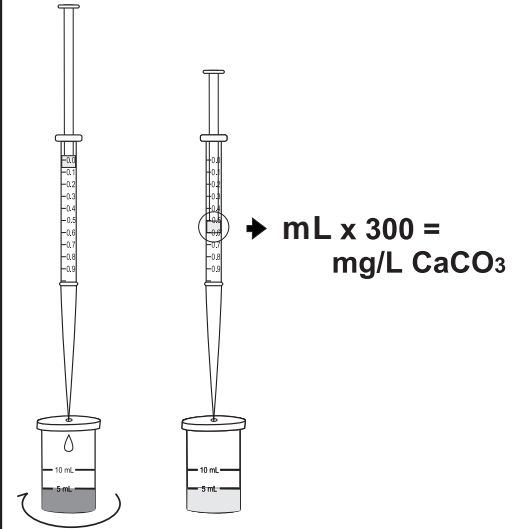


3

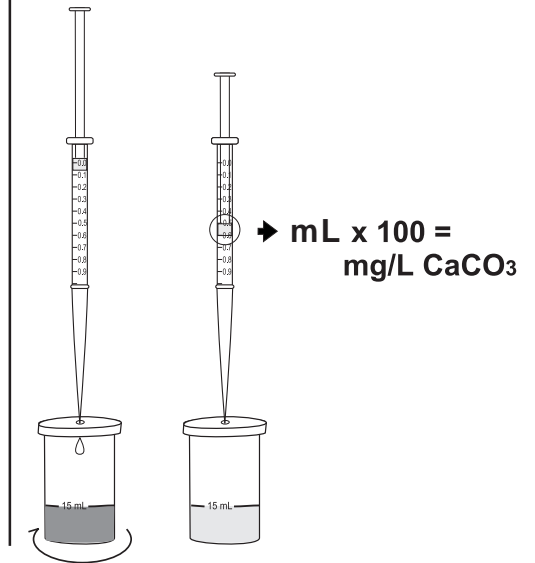


5 mL sample

4



15 mL sample



HI 3820 Acidity Test Kit



www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Product. Please read the instructions carefully before using the chemical test kit. It will provide you with the necessary information for correct use of the kit.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

Each kit is supplied with:

- Dechlorinating reagent, 1 bottle with dropper (10 mL);
- Bromophenol Blue Indicator, 1 bottle with dropper (10 mL);
- Phenolphthalein Indicator, 1 bottle with dropper (10 mL);
- HI 3820-0, 1 bottle (120 mL);
- 2 calibrated vessels (10 and 50 mL);
- 1 calibrated syringe.

Note: Any damaged or defective item must be returned in its original packing materials.

SPECIFICATIONS

Range	0 to 100 mg/L (ppm) CaCO ₃ 0 to 500 mg/L (ppm) CaCO ₃
Smallest Increment	1 mg/L [in the 0-100 mg/L range] 5 mg/L [in the 0-500 mg/L range]
Analysis Method	Base titration using phenolphthalein and bromphenol blue indicators
Sample Size	5 mL and 25 mL
Number of Tests	110 (average)
Case Dimensions	260x120x60 mm (10.2x4.7x2.4")
Shipping Weight	910 g (34.0 oz.)

ISTR3820R2 12/01

SIGNIFICANCE AND USE

Acidity is the quantitative capacity of a water sample to neutralize a base to a set pH. Therefore, the greater acidity, the more potentially corrosive the water. Acidity can be caused by mineral acids, organic acids and carbon dioxide in the form of carbonic acid. Today, our water supplies are becoming more contaminated with corrosive chemicals from industrial dumping or acid rain. Therefore, acidity measurements are an essential monitoring device to define and control pollution in sewers, lakes and rivers. Acidity of water is equally important to monitor in soils and fish farming to maximize the growing environment.

The Hanna Acidity Test Kit is equipped with all you need to determine acidity of water. The kit is quick, easy to use and portable. This makes it practical for field as well as laboratory use. The design makes the kit easy to handle and, except for HI 3820-0, practically prevents accidental injury or damage due to spills.

Note: mg/L is equivalent to ppm (parts per million).

CHEMICAL REACTION

Strong acids (such as mineral acids) and organic acids can contribute to the acidity of a water sample. With the use of diluted sodium hydroxide as the titrant and bromphenol blue or phenolphthalein indicators, the contribution of strong or organic acids can be determined. The measurement of the strong acid contribution to the sample acidity is known as methyl orange acidity. This is carried out by titrating with sodium hydroxide until the solution turns from yellow to green/blue (pH endpoint about 4.5). The total acidity caused by both mineral and organic acids is determined by titrating to an endpoint pH of 8.3, using phenolphthalein as an indicator. This is known as phenolphthalein acidity.

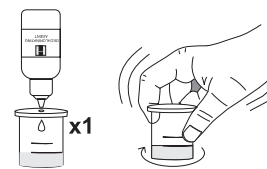
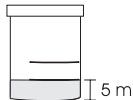
INSTRUCTIONS

READ ALL THE INSTRUCTIONS BEFORE USING THE TEST KIT
LOOK AT THE BACK PAGE FOR THE ILLUSTRATED PROCEDURE

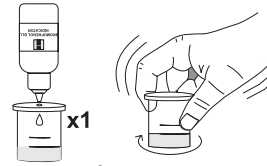
Note: Push and twist pipet tip onto tapered end of syringe ensuring an air tight-fit.

Determination of Methyl Orange Acidity

- Remove the cap from the small plastic vessel. Rinse the vessel with water sample, fill to the 5 mL mark and replace the cap.
- Add 1 drop of Dechlorinating reagent through the cap port and mix by carefully swirling the vessel in tight circles.



x1

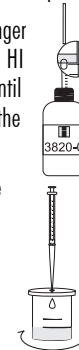


x1

- Through the cap port, add 1 drop of Bromophenol Blue

indicator and mix. If the solution is green or blue, then record the methyl orange acidity as zero. Proceed with procedure for the determination of phenolphthalein acidity. If the solution is yellow proceed with the next step.

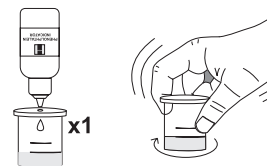
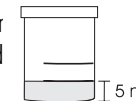
- Take the titration syringe and push the plunger completely into the syringe. Insert tip into HI 3820-0 solution and pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.
- Place the syringe tip into the cap port of the plastic vessel and slowly add the titration solution drop-wise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel changes from yellow to green.
- Read off the milliliters of titration solution from the syringe scale and multiply by 500 to obtain mg/L (ppm) CaCO₃.



$$\text{Syringe Scale} \times 500 = \text{mg/L CaCO}_3$$

Determination of Phenolphthalein Acidity

- Remove the cap from the small plastic vessel. Rinse the vessel with water sample, fill to the 5 mL mark and replace the cap.
- Through the cap port, add 1 drop of Phenolphthalein indicator and mix. If the solution turns red or pink,



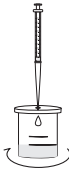
x1

then the solution is alkaline and an alkalinity test must be carried out (see Hanna Alkalinity Test Kit – HI 3811). If the solution remains colorless, proceed to next step.

- Take the titration syringe and push the plunger completely into the syringe. Insert tip into HI 3820-0 solution and pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe.



- Place the syringe tip into the cap port of the plastic vessel and slowly add the titration solution dropwise, swirling to mix after each drop. Continue adding titration solution until the solution in the plastic vessel turns pink.



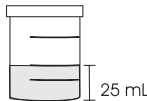
- Read off the milliliters of titration solution from the syringe scale and multiply by 500 to obtain mg/L (ppm) CaCO₃.

$$\text{Syringe Scale} \times 500 = \text{mg/L CaCO}_3$$

Low Range Determinations

If result is lower than 100 mg/L, the precision of the test can be improved.

- Remove the cap from the large plastic vessel. Rinse the vessel with water sample, fill to the 25 mL mark and replace the cap.
- Proceed with the test as explained for high range measurements.
- To obtain the results for both methyl orange and phenolphthalein acidity, multiply the read off the syringe by 100.



$$\text{Syringe Scale} \times 100 = \text{mg/L CaCO}_3$$

REFERENCES

1987 Annual Book of ASTM Standard, Volume 11.01 Water (1), pages 151-158.
Official Methods of Analysis, A.O.A.C., 14th Edition, 1984, page 618.
Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992, pages 2-23, 2-24.

ACCESSORIES

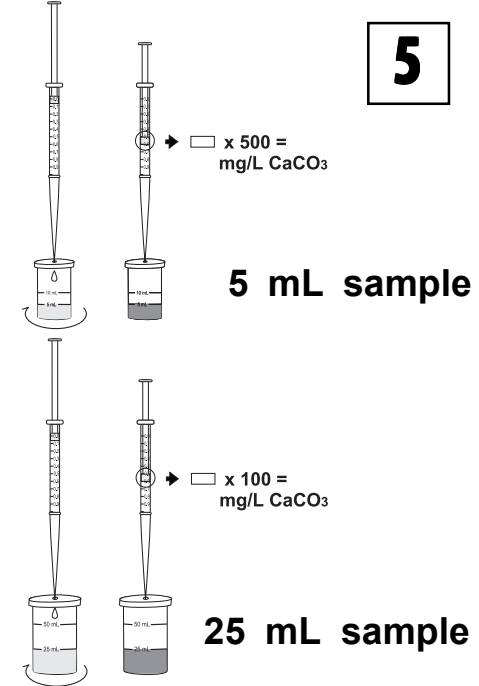
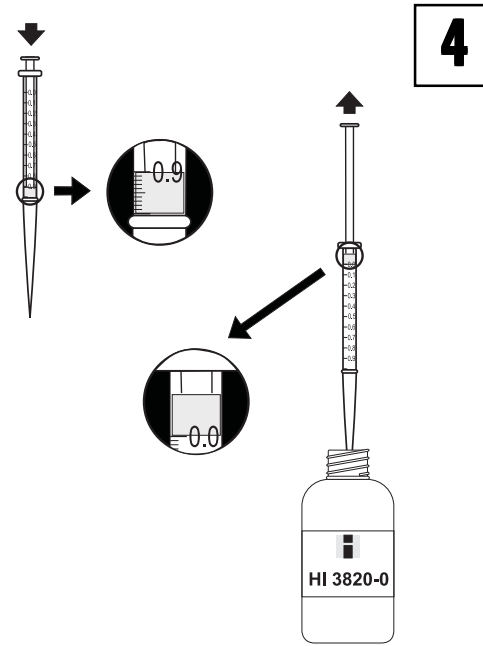
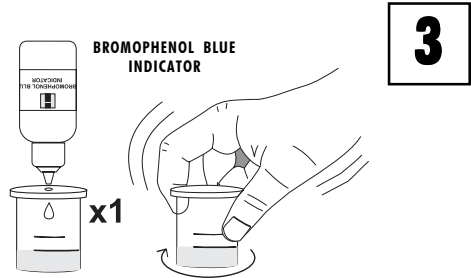
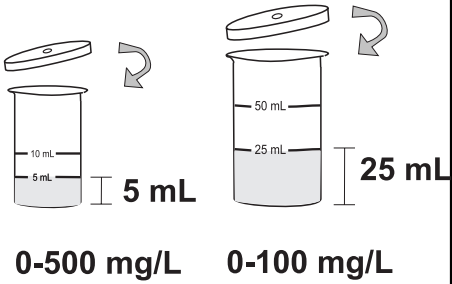
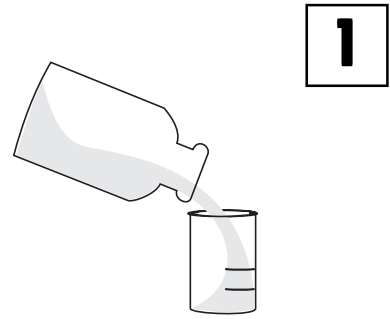
HI 3820-100 Spare reagents (100 tests)

HEALTH AND SAFETY

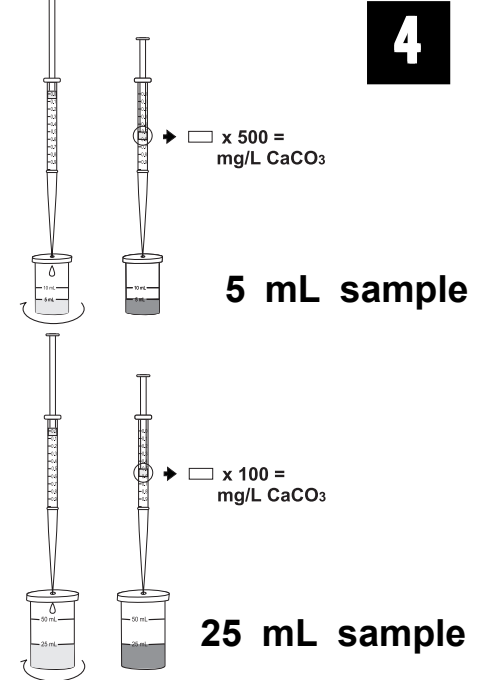
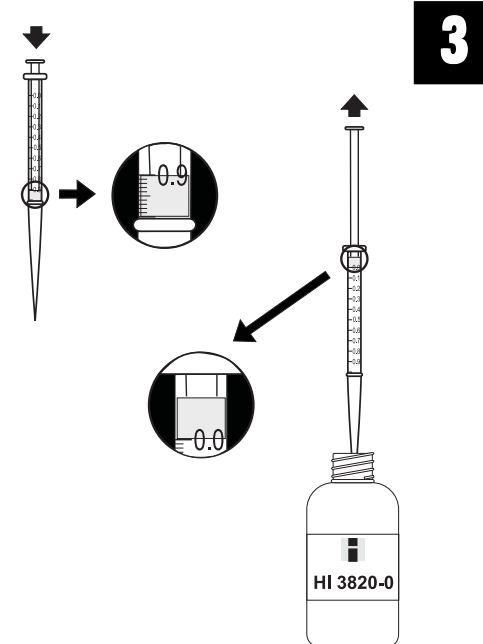
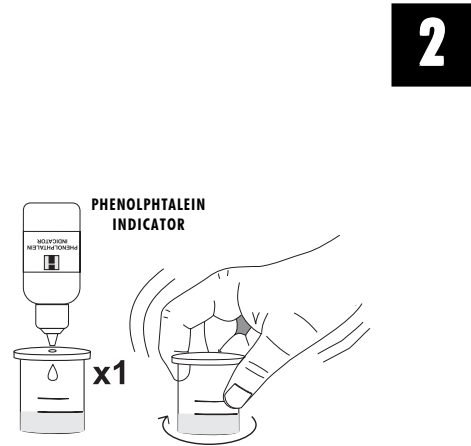
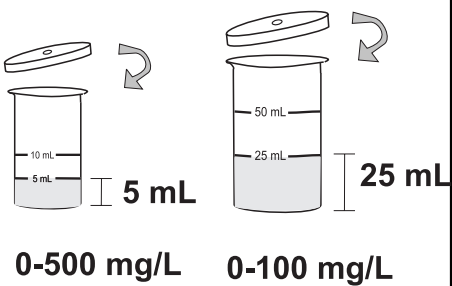
The chemicals contained in this test kit may be hazardous if improperly handled. Read Health and Safety Data Sheets before performing the test.

HI 3820 ACIDITY TEST KIT

METHYL ORANGE ACIDITY



PHENOLPHTHALEIN ACIDITY





APPENDIX F

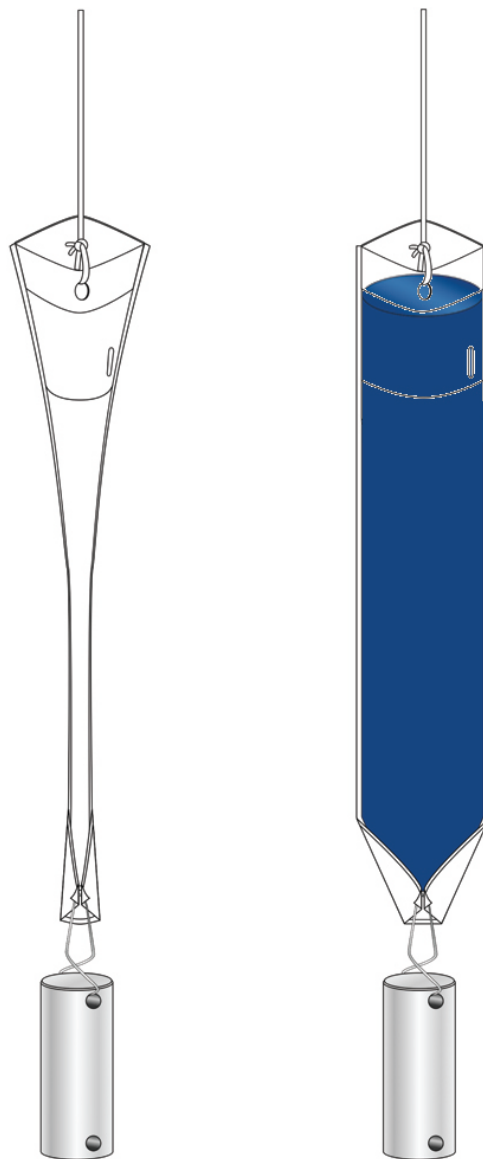
Standard Operating Procedure - HydraSleeve

HYDRASleeve™

Simple by Design

US Patent No. 6,481,300; No. 6,837,120 others pending

Standard Operating Procedure: Sampling Ground Water with a HydraSleeve



This Guide should be used in addition to field manuals appropriate to sampling device (i.e., HydraSleeve or Super Sleeve).

Find the appropriate field manual on the HydraSleeve website at <http://www.hydrasleeve.com>.

For more information about the HydraSleeve, or if you have questions, contact:
GeoInsight, 2007 Glass Road, Las Cruces, NM 88005, 1-800-996-2225,
info@hydrasleeve.com.

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Introduction

The HydraSleeve is classified as a no-purge (passive) grab sampling device, meaning that it is used to collect ground-water samples directly from the screened interval of a well without having to purge the well prior to sample collection. When it is used as described in this Standard Operating Procedure (SOP), the HydraSleeve causes no drawdown in the well (until the sample is withdrawn from the water column) and only minimal disturbance of the water column, because it has a very thin cross section and it displaces very little water (<100 ml) during deployment in the well. The HydraSleeve collects a sample from within the screen only, and it excludes water from any other part of the water column in the well through the use of a self-sealing check valve at the top of the sampler. It is a single-use (disposable) sampler that is not intended for reuse, so there are no decontamination requirements for the sampler itself.

The use of no-purge sampling as a means of collecting representative ground-water samples depends on the natural movement of ground water (under ambient hydraulic head) from the formation adjacent to the well screen through the screen. Robin and Gillham (1987) demonstrated the existence of a dynamic equilibrium between the water in a formation and the water in a well screen installed in that formation, which results in formation-quality water being available in the well screen for sampling at all times. No-purge sampling devices like the HydraSleeve collect this formation-quality water as the sample, under undisturbed (non-pumping) natural flow conditions. Samples collected in this manner generally provide more conservative (i.e., higher concentration) values than samples collected using well-volume purging, and values equivalent to samples collected using low-flow purging and sampling (Parsons, 2005).

Applications of the HydraSleeve

The HydraSleeve can be used to collect representative samples of ground water for all analytes (volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], common metals, trace metals, major cations and anions, dissolved gases, total dissolved solids, radionuclides, pesticides, PCBs, explosive compounds, and all other analytical parameters). Designs are available to collect samples from wells from 1” inside diameter and larger. The HydraSleeve can collect samples from wells of any yield, but it is especially well-suited to collecting samples from low-yield wells, where other sampling methods can’t be used reliably because their use results in dewatering of the well screen and alteration of sample chemistry (McAlary and Barker, 1987).

The HydraSleeve can collect samples from wells of any depth, and it can be used for single-event sampling or long-term ground-water monitoring programs. Because of its thin cross section and flexible construction, it can be used in narrow, constricted or damaged wells where rigid sampling devices may not fit. Using multiple HydraSleeves deployed in series along a single suspension line or tether, it is also possible to conduct in-well vertical profiling in wells in which contaminant concentrations are thought to be stratified.

As with all groundwater sampling devices, HydraSleeves should not be used to collect groundwater samples from wells in which separate (non-aqueous) phase hydrocarbons (i.e., gasoline, diesel fuel or jet fuel) are present because of the possibility of incorporating some of the separate-phase hydrocarbon into the sample.

Description of the HydraSleeve

The HydraSleeve (Figure 1) consists of the following basic components:

- A suspension line or tether (A.), attached to the spring clip or directly to the top of the sleeve to deploy the device into and recover the device from the well. Tethers with depth indicators marked in 1-foot intervals are available from the manufacturer.
- A long, flexible, 4-mil thick lay-flat polyethylene sample sleeve (C.) sealed at the bottom (this is the sample chamber), which comes in different sizes, as discussed below with a self-sealing reed-type flexible polyethylene check valve built into the top of the sleeve (B.) to prevent water from entering or exiting the sampler except during sample acquisition.
- A reusable stainless-steel weight with clip (D.), which is attached to the bottom of the sleeve to carry it down the well to its intended depth in the water column. Bottom weights available from the manufacturer are 0.75" OD and are available in three sizes: 5 oz. (2.5" long); 8 oz. (4" long); and 16 oz. (8" long). In lieu of a bottom weight, an optional top weight may be attached to the top of the HydraSleeve to carry it to depth and to compress it at the bottom of the well (not shown in Figure 1);
- A discharge tube that is used to puncture the HydraSleeve after it is recovered from the well so the sample can be decanted into sample bottles (not shown).
- Just above the self-sealing check valve at the top of the sleeve are two holes which provide attachment points for the spring clip and/or suspension line or tether. At the bottom of the sample sleeve are two holes which provide attachment points for the weight clip and weight.

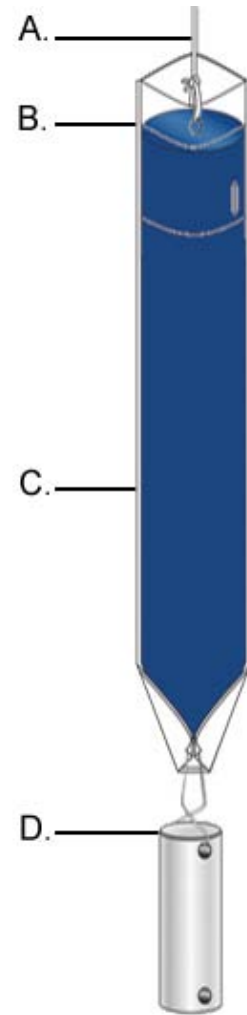


Figure 1. HydraSleeve components.

Note: The sample sleeve and the discharge tube are designed for one-time use and are disposable. The spring clip, weight and weight clip may be reused after thorough cleaning. Suspension cord is generally disposed after one use although, if it is dedicated to the well, it may be reused at the discretion of the sampling personnel.

Selecting the HydraSleeve Size to Meet Site-Specific Sampling Objectives

It is important to understand that each HydraSleeve is able to collect a finite volume of sample because, after the HydraSleeve is deployed, you only get one chance to collect an undisturbed sample. Thus, the volume of sample required to meet your site-specific sampling and analytical requirements will dictate the size of HydraSleeve you need to meet these requirements.

The volume of sample collected by the HydraSleeve varies with the diameter and length of the HydraSleeve. Dimensions and volumes of available HydraSleeve models are detailed in Table 1.

Table 1. Dimensions and volumes of HydraSleeve models.

Diameter	Volume	Length	Lay-Flat Width	Filled Dia.
<i>2-Inch HydraSleeves</i>				
Standard 625-ml HydraSleeve	625 ml	< 30"	2.5"	1.4"
Standard 1-Liter HydraSleeve	1 Liter	38"	3"	1.9"
1-Liter HydraSleeve SS	1 Liter	36"	3"	1.9"
2-Liter HydraSleeve SS	2 Liters	60"	3"	1.9"
<i>4-Inch HydraSleeves</i>				
Standard 1.6-Liter HydraSleeve	1.6 Liters	30"	3.8"	2.3"
Custom 2-Liter HydraSleeve	2 Liters	36"	4"	2.7"

HydraSleeves can be custom-fabricated by the manufacturer in varying diameters and lengths to meet specific volume requirements. HydraSleeves can also be deployed in series (i.e., multiple HydraSleeves attached to one tether) to collect additional sample to meet specific volume requirements, as described below.

If you have questions regarding the availability of sufficient volume of sample to satisfy laboratory requirements for analysis, it is recommended that you contact the laboratory to discuss the minimum volumes needed for each suite of analytes. Laboratories often require only 10% to 25% of the volume they specify to complete analysis for specific suites of analytes, so they can often work with much smaller sample volumes that can easily be supplied by a HydraSleeve.

HydraSleeve Deployment

Information Required Before Deploying a HydraSleeve

Before installing a HydraSleeve in any well, you will need to know the following:

- The inside diameter of the well
- The length of the well screen
- The water level in the well
- The position of the well screen in the well
- The total depth of the well

The inside diameter of the well is used to determine the appropriate HydraSleeve diameter for use in the well. The other information is used to determine the proper placement of the HydraSleeve in the well to collect a representative sample from the screen (see HydraSleeve Placement, below), and to determine the appropriate length of tether to attach to the HydraSleeve to deploy it at the appropriate position in the well.

Most of this information (with the exception of the water level) should be available from the well log; if not, it will have to be collected by some other means. The inside diameter of the well can be measured at the top of the well casing, and the total depth of the well can be measured by sounding the bottom of the well with a weighted tape. The position and length of the well screen may have to be determined using a down-hole camera if a well log is not available. The water level in the well can be measured using any commonly available water-level gauge.

HydraSleeve Placement

The HydraSleeve is designed to collect a sample directly from the well screen, and it fills by pulling it up through the screen a distance equivalent to 1 to 1.5 times its length. This upward motion causes the top check valve to open, which allows the device to fill. To optimize sample recovery, it is recommended that the HydraSleeve be placed in the well so that the bottom weight rests on the bottom of the well and the top of the HydraSleeve is as close to the bottom of the well screen as possible. This should allow the sampler to fill before the top of the device reaches the top of the screen as it is pulled up through the water column, and ensure that only water from the screen is collected as the sample. In short-screen wells, or wells with a short water column, it may be necessary to use a top-weight on the HydraSleeve to compress it in the bottom of the well so that, when it is recovered, it has room to fill before it reaches the top of the screen.

Example

2" ID PVC well, 50' total depth, 10' screen at the bottom of the well, with water level above the screen (the entire screen contains water).

Correct Placement (figure 2): Using a standard HydraSleeve for a 2" well (2.6" flat width/1.5" filled OD x 30" long, 650 ml volume), deploy the sampler so the weight (an 8 oz., 4"-long weight with a 2"-long clip) rests at the bottom of the well. The top of the sleeve is thus set at about 36" above the bottom of the well. When the sampler is recovered, it will be pulled upward approximately 30" to 45" before it is filled; therefore, it is full (and the top check valve closes) at approximately 66" (5 ½ feet) to 81" (6 ¾ feet) above the bottom of the well, which is well before the sampler reaches the top of the screen. In this example, only water from the screen is collected as a sample.

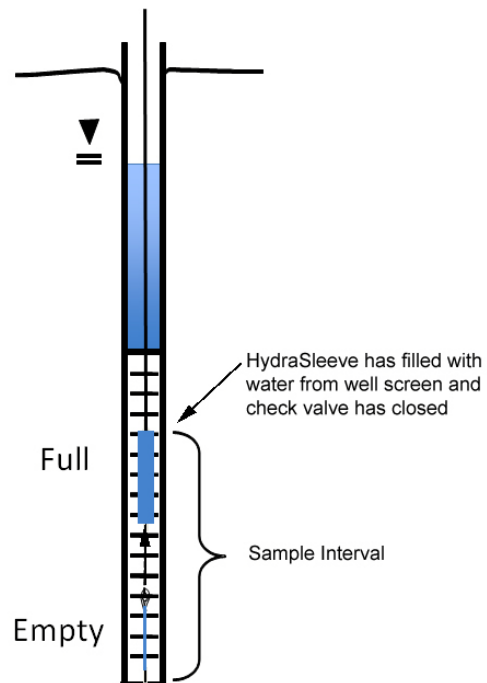


Figure 2. Correct placement of HydraSleeve.

Incorrect Placement (figure 3): If the well screen in this example was only 5' long, and the HydraSleeve was placed as above, it would not fill before the top of the device reached the top of the well screen, so the sample would include water from above the screen, which may not have the same chemistry.

The solution? Deploy the HydraSleeve with a top weight, so that it is collapsed to within 6" to 9" of the bottom of the well. When the HydraSleeve is recovered, it will fill within 39" (3 ¼ feet) to 54" (4 ½ feet) above the bottom of the well, or just before the sampler reaches the top of the screen, so it collects only water from the screen as the sample.

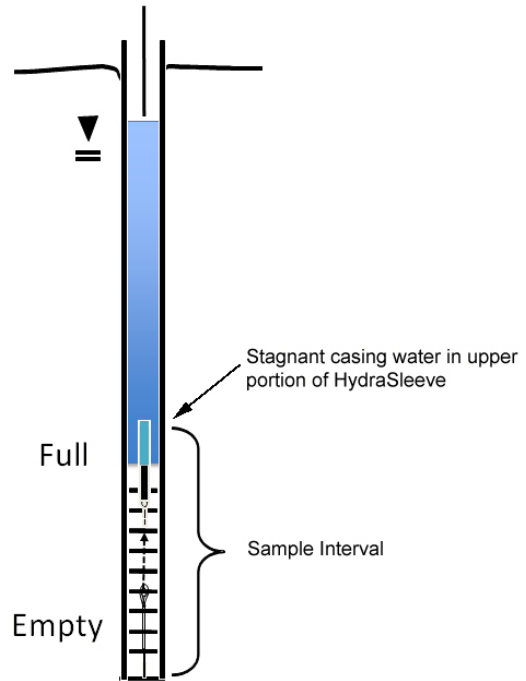


Figure 3. Incorrect placement of HydraSleeve.

This example illustrates one of many types of HydraSleeve placements. More complex placements are discussed in a later section.

Procedures for Sampling with the HydraSleeve

Collecting a ground-water sample with a HydraSleeve is a simple one-person operation.

Note: Before deploying the HydraSleeve in the well, collect the depth-to-water measurement that you will use to determine the preferred position of the HydraSleeve in the well. This measurement may also be used with measurements from other wells to create a ground-water contour map. If necessary, also measure the depth to the bottom of the well to verify actual well depth to confirm your decision on placement of the HydraSleeve in the water column.

Measure the correct amount of tether needed to suspend the HydraSleeve in the well so that the weight will rest on the bottom of the well (or at your preferred position in the well). Make sure to account for the need to leave a few feet of tether at the top of the well to allow recovery of the sleeve

Note: Always wear sterile gloves when handling and discharging the HydraSleeve.

I. Assembling the HydraSleeve

1. Remove the HydraSleeve from its packaging, unfold it, and hold it by its top.
2. Crimp the top of the HydraSleeve by folding the hard polyethylene reinforcing strips at the holes.
3. Attach the spring clip to the holes to ensure that the top will remain open until the sampler is retrieved.
4. Attach the tether to the spring clip by tying a knot in the tether.

Note: Alternatively, attach the tether to one (NOT both) of the holes at the top of the Hydrasleeve by tying a knot in the tether.

5. Fold the flaps with the two holes at the bottom of the HydraSleeve together and slide the weight clip through the holes.
6. Attach a weight to the bottom of the weight clip to ensure that the HydraSleeve will descend to the bottom of the well.

II. Deploying the HydraSleeve

1. Using the tether, carefully lower the HydraSleeve to the bottom of the well, or to your preferred depth in the water column

During installation, hydrostatic pressure in the water column will keep the self-sealing check valve at the top of the HydraSleeve closed, and ensure that it retains its flat, empty profile for an indefinite period prior to recovery.

Note: Make sure that it is not pulled upward at any time during its descent. If the HydraSleeve is pulled upward at a rate greater than 0.5'/second at any time prior to recovery, the top check valve will open and water will enter the HydraSleeve prematurely.

2. Secure the tether at the top of the well by placing the well cap on the top of the well casing and over the tether.

Note: Alternatively, you can tie the tether to a hook on the bottom of the well cap (you will need to leave a few inches of slack in the line to avoid pulling the sampler up as the cap is removed at the next sampling event).

III. Equilibrating the Well

The equilibration time is the time it takes for conditions in the water column (primarily flow dynamics and contaminant distribution) to restabilize after vertical mixing occurs (caused by installation of a sampling device in the well).

- Situation: The HydraSleeve is deployed for the first time or for only one time in a well

The HydraSleeve is very thin in cross section and displaces very little water (<100 ml) during deployment so, unlike most other sampling devices, it does not disturb the water column to the point at which long equilibration times are necessary to ensure recovery of a representative sample.

In most cases, the HydraSleeve can be recovered immediately (with no equilibration time) or within a few hours. In regulatory jurisdictions that impose specific requirements for equilibration times prior to recovery of no-purge sampling devices, these requirements should be followed.

- Situation: The HydraSleeve is being deployed for recovery during a future sampling event

In periodic (i.e., quarterly or semi-annual) sampling programs, the sampler for the current sampling event can be recovered and a new sampler (for the next sampling event)

deployed immediately thereafter, so the new sampler remains in the well until the next sampling event.

Thus, a long equilibration time is ensured and, at the next sampling event, the sampler can be recovered immediately. This means that separate mobilizations, to deploy and then to recover the sampler, are not required. HydraSleeves can be left in a well for an indefinite period of time without concern.

IV. HydraSleeve Recovery and Sample Collection

1. Hold on to the tether while removing the well cap.
2. Secure the tether at the top of the well while maintaining tension on the tether (but without pulling the tether upwards)
3. Measure the water level in the well.
4. In one smooth motion, pull the tether up between 30” to 45” (36” to 54” for the longer HydraSleeve) at a rate of about 1’ per second (or faster).

The motion will open the top check valve and allow the HydraSleeve to fill (it should fill in about 1 to 1.5 times the length of the HydraSleeve). This is analogous to coring the water column in the well from the bottom up.

When the HydraSleeve is full, the top check valve will close. You should begin to feel the weight of the HydraSleeve on the tether and it will begin to displace water. The closed check valve prevents loss of sample and entry of water from zones above the well screen as the HydraSleeve is recovered.

5. Continue pulling the tether upward until the HydraSleeve is at the top of the well.
6. Decant and discard the small volume of water trapped in the Hydrasleeve above the check valve by turning the sleeve over.

V. Sample Collection

Note: Sample collection should be done immediately after the HydraSleeve has been brought to the surface to preserve sample integrity.

1. Remove the discharge tube from its sleeve.
2. Hold the HydraSleeve at the check valve.
3. Puncture the HydraSleeve just below the check valve with the pointed end of the discharge tube
4. Discharge water from the HydraSleeve into your sample containers.

Control the discharge from the HydraSleeve by either raising the bottom of the sleeve, by squeezing it like a tube of toothpaste, or both.

5. Continue filling sample containers until all are full.

Measurement of Field Indicator Parameters

Field indicator parameter measurement is generally done during well purging and sampling to confirm when parameters are stable and sampling can begin. Because no-purge sampling does not require purging, field indicator parameter measurement is not necessary for the purpose of confirming when purging is complete.

If field indicator parameter measurement is required to meet a specific non-purging regulatory requirement, it can be done by taking measurements from water within a HydraSleeve that is not used for collecting a sample to submit for laboratory analysis (i.e., a second HydraSleeve installed in conjunction with the primary sample collection HydraSleeve [see Multiple Sampler Deployment below]).

Alternate Deployment Strategies

Deployment in Wells with Limited Water Columns

For wells in which only a limited water column exists to be sampled, the HydraSleeve can be deployed with an optional top weight instead of a bottom weight, which collapses the HydraSleeve to a very short (approximately 6” to 9”) length, and allows the HydraSleeve to fill in a water column only 36” to 45” in height.

Multiple Sampler Deployment

Multiple sampler deployment in a single well screen can accomplish two purposes:

- It can collect additional sample volume to satisfy site or laboratory-specific sample volume requirements.
- It can accommodate the need for collecting field indicator parameter measurements.
- It can be used to collect samples from multiple intervals in the screen to allow identification of possible contaminant stratification.

It is possible to use up to 3 standard 30” HydraSleeves deployed in series along a single tether to collect samples from a 10’ long well screen without collecting water from the interval above the screen.

The samplers must be attached to the tether at both the top and bottom of the sleeve. Attach the tether at the top with a stainless-steel clip (available from the manufacturer). Attach the tether at the bottom using a cable tie. The samplers must be attached as follows (figure 4):

- The first (attached to the tether as described above, with the weight at the bottom) at the bottom of the screen
- The second attached immediately above the first
- The third (attached the same as the second) immediately above the second

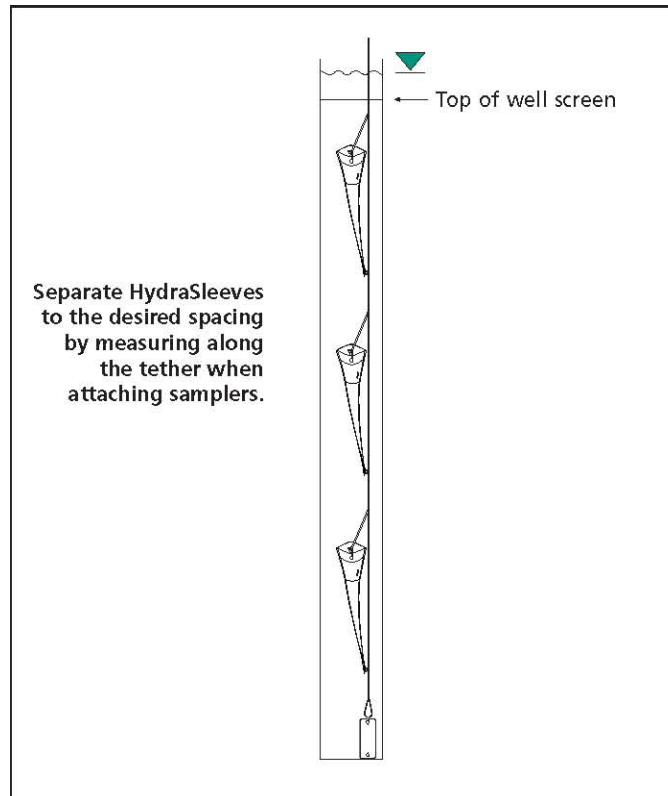


Figure 4. Multiple HydraSleeve deployment.

Alternately, the first sampler can be attached to the tether as described above, a second attached to the bottom of the first using a short length of tether (in place of the weight), and the third attached to the bottom of the second in the same manner, with the weight attached to the bottom of the third sampler (figure 5).

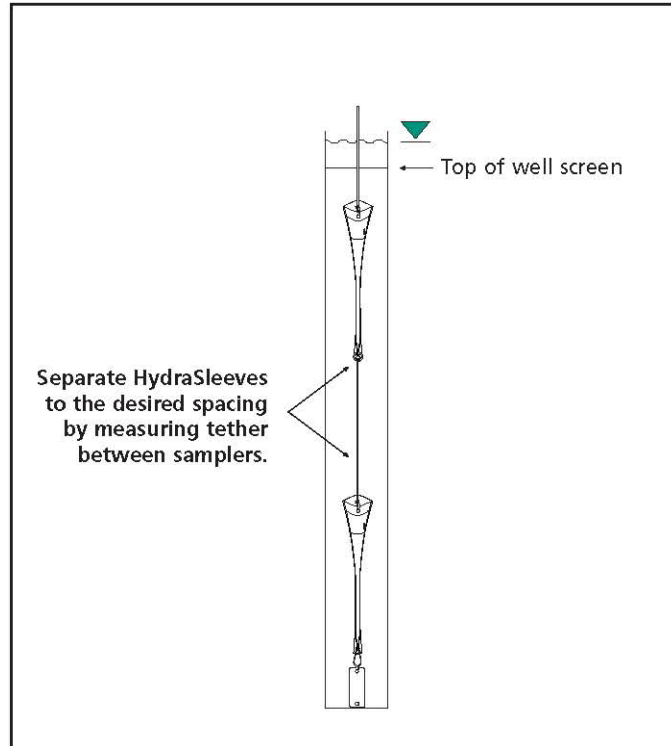


Figure 5. Alternative method for deploying multiple HydraSleeves.

In either case, when attaching multiple HydraSleeves in series, more weight may be required to hold the samplers in place in the well than would be required with a single sampler. Recovery of multiple samplers and collection of samples is done in the same manner as for single sampler deployments.

Post-Sampling Activities

The recovered HydraSleeve and the sample discharge tubing should be disposed as per the solid waste management plan for the site. To prepare for the next sampling event, a new HydraSleeve can be deployed in the well (as described previously) and left in the well until the next sampling event, at which time it can be recovered.

The weight and weight clip can be reused on this sampler after they have been thoroughly cleaned as per the site equipment decontamination plan. The tether may be dedicated to the well and reused or discarded at the discretion of sampling personnel.

References

McAlary, T. A. and J. F. Barker, 1987, Volatilization Losses of Organics During Ground-Water Sampling From Low-Permeability Materials, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 63-68

Parsons, 2005, Results Report for the Demonstration of No-Purge Ground-Water Sampling Devices at Former McClellan Air Force Base, California; Contract F44650-99-D-0005, Delivery Order DKO1, U.S. Army Corps of Engineers (Omaha District), U.S. Air Force Center for Environmental Excellence, and U.S. Air Force Real Property Agency

Robin, M. J. L. and R. W. Gillham, 1987, Field Evaluation of Well Purging Procedures, Ground-Water Monitoring Review, Vol. 7, No. 4, pp. 85-93



APPENDIX G

Chain of Custody Documentation

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury Phone: (08) 9355 7100 Email: richelle.bunbury@coffey.com
 Invoices to: _____ Phone: _____ Email: chris_jowsey@coffey.com

Project No: ENAUPERT04268AA Task No: Lab
 Project Name: Northlink (NL) Laboratory: MGT
 Sampler's Name: Chris Jowsey Project Manager: Richelle Bunbury
 Special Instructions: Nutrients: Total N, NO3, NO2, NH3, Total P and Filterable Reactive Phosphorus (FRP)
 Other Parameters = pH, conductivity (EC), total dissolved solids (TDS); - Major anions and cations - Na, K, Ca, Mg, Cl, SO4; CO3, HCO3; Total acidity and Total alkalinity;
 Metals = Al, As, Cd, Cr, Cu, Fe, Pb, Mg, Hg, Ni, Se, Zn (dissolved and total)

Analysis Request Section																
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Nutrients	Metals	Other Parameters	Metals (dissolved only)	Bacteria	TRH/ BTEX	SVOCs	OPP/ OCPs	Bacteria	NOTES
	6W05 NL-BH24 SSI4 5399 SSSF1 SSF2 SSF3 QC3 QC5 QC6	15/12/15	—	Water	3xP, 1xP ↓ 4xP, 1xP ↓ 3xP, 1xP ↓ 1xP 1xP	5 day	+	+	+		+				+	
							x	x	x	x						

RELINQUISHED BY	RECEIVED BY	Sample Receipt Advice: (Lab Use Only)
Name: Chris Jowsey Date: _____ →	Name: _____ Date: _____	All Samples Received in Good Condition <input type="checkbox"/>
Coffey Environments Time: _____	Company: _____ Time: _____	All Documentation is in Proper Order <input type="checkbox"/>
Name: _____ Date: _____ →	Name: _____ Date: _____	Samples Received Properly Chilled <input type="checkbox"/>
Company: _____ Time: _____	Company: _____ Time: _____	Lab. Ref/Batch No. 483591 SV 16.12.15

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

EnviroSampleVIC

From: Natalie Krasselt <NatalieKrasselt@eurofins.com>
Sent: Wednesday, 16 December 2015 12:36 PM
To: Stefan Voorham
Cc: EnviroSampleVIC
Subject: RE: COFFEY PERTH REPORT 483591

Follow Up Flag: Follow up
Flag Status: Completed

FYI Bacteria = E.Coli & Thermotolerant Coliforms, can you please log in?

I have let Steven know.

Natalie Krasselt
Phone : +61 3 8564 5051
Email : NatalieKrasselt@eurofins.com

From: Stefan Voorham
Sent: Wednesday, 16 December 2015 11:20 AM
To: Natalie Krasselt
Subject: COFFEY PERTH REPORT 483591

Hi Nat,

I have completed the Coffey report that we were discussing.

I am unlikely to be downstairs after morning tea, so please forward additional testing to Anthony.

Thanks,

Stefan

For the Christmas and New Year period, please [Click here](#) to view laboratory shutdown dates.

Click [here](#) to report this email as spam.



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100

Report Results to: Richelle Bunbury

Phone: (08) 9355 7100

Email: richelle.bunbury@coffey.com

Invoices to:

Phone:

Email: chris_jowsey@coffey.com

Project No:	ENAUPERT04268AA	Task No:	Lab
Project Name:	Northlink (NL)	Laboratory:	MGT
Sampler's Name:	Chris Jowsey	Project Manager:	Richelle Bunbury
Special Instructions:	Nutrients: Total N, NO3, NO2, NH3, Total P and Filterable Reactive Phosphorus (FRP)		
Other Parameters =	pH, conductivity (EC), total dissolved solids (TDS); - Major anions and cations - Na, K, Ca, Mg, Cl, SO4; CO3, HCO3; Total acidity and Total alkalinity;		
	Metals = Al, As, Cd, Cr, Cu, Fe, Pb, Mg, Hg, Ni, Se, Zn (dissolved and total)		

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Nutrients	Metals	Other Parameters	Metals (dissolved only)	Bacteria	TRH/ BTEX	SVOCS	OPP/OCPS	NOTES
	QC11	18/12/15	AM	WATER	2xV2x43xP	5 DAYS				X		X			
	QC12	↓	↓	↓	2xV2x43xP	↓	X	X	X			X	X	X	
	QC11 QC10	↓	↓	↓	1xP	↓				X					
	NLBHOS	↓	↓	↓	3xP 1xG	↓	X	X	X						
	4816	↓	↓	↓	3xP 1xG	↓	X	X	X						
	GW1	↓	↓	↓	2xV2x43xP	↓	X	X	X			X	X	X	
	GW5	↓	↓	↓	2xV2x43xP	↓	X	X	X			X	X	X	

RELINQUISHED BY

Name: Chris Jowsey Date: 18/12/15 →
 Coffey Environments Time: 1330

Name: _____ Date: _____ →
 Company: _____ Time: _____

RECEIVED BY

Name: Kelly Jones Date: 18/12/15 -
 Company: Eur. fins perth - Time: 4:45pm

Name: Jimmy Date: 21/12
 Company: EF/MGT Time: 4:30pm

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition

All Documentation is in Proper Order

Samples Received Properly Chilled

Lab. Ref/Batch No. 484225

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



04483AA

Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Chris Jowsey Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
	QC18	27/1/16	AM	water	4xP	5 days	X	X	X	X	X	X						
	MW1	27/1/16	AM	"	4xP	"	X	X	X	X	X	X						
	MW2	27/1/16	AM	"	4xP	"	X	X	X	X	X	X						
	MW3	27/1/16	AMP	"	4xP	"	X	X	X	X	X	X						
	QC19	"	"	"	1xP	"			X									
	QC20	"	"	"	1xP	"			X									Dissolved only " "

RELINQUISHED BY
 Name: Chris Jowsey Date: 27/1/16
 Coffey Environments Time: →

RECEIVED BY
 Name: LIAM Company: EF/merit Date: 28/1/16 Time: 8:58am
 →

486999

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section											
Project Name: NL_Baseline GW_SW Monitoring Laboratory: <i>MGT</i>							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	<i>MW4</i>	<i>28/11/15</i>	<i>PM</i>	<i>Water</i>	<i>4XP</i>	<i>5 days</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>							
	<i>MW5</i>	<i> </i>	<i>PM</i>	<i> </i>	<i> </i>	<i> </i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>							
	<i>MW6</i>	<i> </i>	<i>PM</i>	<i> </i>	<i> </i>	<i> </i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>							
	<i>SW1-1</i>	<i> </i>	<i>AM</i>	<i> </i>	<i>5XP</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i>X</i>	<i>X</i>				
	<i>SW1-2</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i> </i>	<i> </i>				
	<i>SW1-3</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i> </i>	<i> </i>				
	<i>SW2-1</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i> </i>	<i> </i>				
	<i>SW2-2</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i> </i>	<i> </i>				
	<i>SW2-3</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>		<i> </i>	<i> </i>				
	<i>QC21</i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i> </i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>		<i>X</i>	<i>X</i>				

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name: <i>Kelly Jones</i>	Date:	<i>28/11/16</i>	→	<i>Carrier</i> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Coffey Environments	Time:		Company: <i>Eurofins Pty</i>	Time:	<i>3:30pm - Chilled.</i>		
Name:	Date:	→	Name:	Date:			
Company:	Time:		Company:	Time:			

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

487053

SU

29.1.16

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100

Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com

Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2

Project Name: NL_Baseline GW_SW Monitoring Laboratory: Analysis Request Section

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN


Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES						
	MW 9	29/11/16	AM	Water	4XP	5 days	X	X	X	X	X	X												
	MW 11	↓	↓	↓	↓	↓																		
	MW 12																							
	MW 13																							
	MW 7																							
	MW 8																							
	MW 24																							
	MW 25																							
	MW 26											X	X	X	X	X	X							
	QC 25				1XP																			
	QC 26				1XP																			

Dissolved Only
" "

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ →	Name: Robert Johnston Date: 01/02/16 <input type="checkbox"/>
Coffey Environments Time: _____	Company: Eurofins MGT Time: _____ <input type="checkbox"/>
Name: _____ Date: _____ →	Name: _____ Date: _____ <input type="checkbox"/>
Company: _____ Time: _____	Company: _____ Time: _____ <input type="checkbox"/>

487310

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

	Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																																																									
	Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com																																																								
	Invoices to: Accounts.Burb@coffey.com	Phone: Email: Harriet.Carter@coffey.com																																																								
Project No: ENAUPERT04483AA Task No: Monitoring Event 2		Analysis Request Section																																																								
Project Name: NL_Baseline GW_SW Monitoring Laboratory: <u>MCT</u>		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Physical Parameters (pH, EC, TDS)</td> <td>Major Anions and Cations</td> <td>Total and dissolved metals</td> <td>Nitrogens - speciated</td> <td>Total Phosphorus</td> <td>Total reactive phosphorus</td> <td>B1</td> <td>OPP/OCF (trace)</td> <td>SVOC</td> <td>Turbidity</td> <td>E.coli, thermotolerant bacteria</td> <td rowspan="5" style="text-align: center; vertical-align: middle; border: 1px solid black; padding: 5px;">NOTES</td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES	X	X	X	X	X	X						X	X	X	X	X	X						X	X	X	X	X	X						X	X	X	X	X	X					
Physical Parameters (pH, EC, TDS)	Major Anions and Cations		Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES																																														
X	X		X	X	X	X																																																				
X	X		X	X	X	X																																																				
X	X		X	X	X	X																																																				
X	X	X	X	X	X																																																					
Sampler's Name: <u>Harriet Carter</u> Project Manager: Richelle Bunbury																																																										
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																																																										
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Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)																																																				
	MW34	1/2/16	AM	WATER	4 x P	5 days	X	X	X	X	X	X																																														
	MW35	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	MW36	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	MW15	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	MW16	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	MW18	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	MW27	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW28	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW29	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW30	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW31	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW32	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓																																														
	MW33	↓	↓	↓	↓	↓	X	X	X	X	X	X																																														
	QC30	↓	↓	↓	1 x P	↓			X					Dissolved only Dissolved only																																												
	QC31	↓	↓	↓	1 x P	↓			X																																																	
RELINQUISHED BY						RECEIVED BY																																																				
Name: <u>Harriet Carter</u>		Date: <u>1/2/16</u>		→		Name: <u>Kelly Jones</u>		Date: <u>1/2/16</u>				Course: <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>																																														
Coffey Environments		Time: <u>1400</u>				Company: <u>Eurofins (Perth)</u>		Time: <u>3pm</u>																																																		
Name:		Date:		→		Name: <u>Liam</u>		Date: <u>2/2/16</u>				<div style="border: 1px solid black; padding: 5px; display: inline-block;">487551</div>																																														
Company:		Time:				Company: <u>EFment</u>		Time: <u>8:24am</u>																																																		
*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative																																																										



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Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section										NOTES		
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP	SVOC	E.coli, thermotolerant bacteria			
	MW48.	2/2/16	A.M	Water	4xP	5 days	X	X	X	X	X	X							
	MW49	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW50	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW51	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW52	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW53	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW54	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	QC32	↓	↓	↓	2xP	↓	↓	↓	↓	↓	↓	↓							
	QC33	↓	↓	↓	11	↓	X	X	X	X	X	X							
	MW36	↓	↓	↓	4xP	↓	X	X	X	X	X	X							
	MW37	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW38	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW39	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	MW42	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓							
	SW4-1	↓	↓	↓	5xP	↓	X	X	X	X	X	X						X	
	SW4-2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						X	
	SW4-3	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓						X	

RELINQUISHED BY		RECEIVED BY	
Name: <u>Chris Jasey</u>	Date: <u>2/2/16</u>	Name:	Date: <u>Robert Johnston</u>
Coffey Environments	Time:	Company:	Time: <u>03/02/16</u>
Name:	Date:	Name:	Date: <u>Eurofins MGT</u>
Company:	Time:	Company:	Time:

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

487605

Reference No. 4483AA

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP	SVOC	E.coli, thermotolerant bacteria	NOTES
	SW3-1	2/2/16	AM	WATER	5 x P	5 days	X	X	X	X	X	X				X	
	SW3-2	2/2/16	AM	↓	5 x P	5 days	X	X	X	X	X	X				X	

RELINQUISHED BY

RECEIVED BY

Name: Chris Jowsey Date: 2/2/16
 Coffey Environments Time:
 Name: Date:
 Company: Time:

Name: Date:
 Company: Time:
 Name: Date:
 Company: Time:

Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory:
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section										NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP	SVOC	E.coli, thermotolerant bacter					
	MW43	3/2/16		Water	4xP	5 days	X	X	X	X	X	X									
	MW44																				
	MW45																				
	MW46																				
	MW47																				
	MW40																				
	MW41																				
	SWGR1-1				5xP																X
	SWGR1-2																				
	SWGR1-3																				
	SWEB-1																				
	SWEB-2																				
	SWEB-3																				
	QC28				4xP																
	QC35				4xP		X	X	X	X	X										
	QC38				1xP																
	QC39				1xP																

BELINQUISHED BY Name: [Signature] Date: 3/2/16 Coffey Environments Time:		RECEIVED BY Name: [Signature] Date: 4/2/16 8:59am Company: [Signature] Time:	
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Dissolved only
 487822

EnviroSampleVIC

From: Chris Jowsey <Chris.Jowsey@coffey.com>
Sent: Thursday, 4 February 2016 12:33 PM
To: EnviroSampleVIC
Subject: Re: ENAUPERT04483AA

Follow Up Flag: Follow up
Flag Status: Completed

Hi Anthony thanks more sediment is mw47

EnviroSampleVIC <EnviroSampleVic@eurofins.com.au> wrote:

Hi Richelle,

We have 2 samples labelled as MW47, but we are missing MW46.

Please advise which is which-see attached.

One has more sediment than the other.

Thanks

Anthony

Enquiries VIC

Eurofins | mgt
2-5 Kingston Town Close
OAKLEIGH VIC 3166
AUSTRALIA
Fax : +61385645090

Email : EnviroSampleVic@eurofins.com.au
Website : environment.eurofins.com.au

Metrological Traceability - what is it? Find out more by reading Eurofins | mgt's EnviroNote by clicking [here](#)

This message has been scanned for malware by Websense. www.websense.com

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Reference No. 4483A/A

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page

coffey		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100													
Report Results to: Richelle Bunbury, Harriet Carter		Mobile: (08) 9269 6200	Email: Richelle.Bunbury@c												
Invoices to: <u>Accounts.Burb@coffey.com</u>		Phone:	Email: <u>Harriet.Carter@coff</u>												
Project No: ENAUPERT04483AA	Task No: Monitoring Event 2	Analysis Request Section													
Project Name: NL_Baseline GW_SW Monitoring	Laboratory: <u>MGT</u>	Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogen - speciated Total Phosphorus Total reactive phosphorus B1 OPP SVOC E.coli, thermotolerant bacter	NOTES												
Sampler's Name: <u>H. Carter</u>	Project Manager: Richelle Bunbury														
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn															
Dissolved metals are to be laboratory filtered															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)									
	MWSS	3/2/16	AM	WATER	2xV1xA2xP	5 days	X	X	X	X	X	X	X	X	
	SWS-1	3/2/16	↓	↓	5xP		X	X	X	X	X	X	X	X	
	SWS-2	3/2/16	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	
	SWG-1	↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	
	SWG-2	↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	
	SWG-3	↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	
	QC36	↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	
RELINQUISHED BY				RECEIVED BY											
Name: <u>H. Carter</u>	Date: <u>3/2/16</u>	→		Name:	Date:										
Coffey Environments	Time: <u>15:00</u>			Company:	Time:										
Name:	Date:	→		Name:	Date:										
Company:	Time:			Company:	Time:										
*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative							Robert Johnston 04/02/16 <input type="checkbox"/> Eurofins MGT <input type="checkbox"/> <input type="checkbox"/>								

4878



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100

Report Results to: Richelle Bunbury, Harriet Carter

Mobile: (08) 9269 6200

Email: Richelle.Bunbury@coffey.com

Invoices to: Accounts.Burb@coffey.com

Phone:

Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

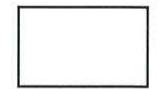
Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria					
	MW1	16/2/16	AM	WATER	3xP1xG	5 days	X	X	X	X	X	X										
	MW2																					
	MW3																					
	MW4																					
	MW6																					
	SWL2-1																					
	SWL2-2				4xP1xG																X	X
	SWL2-3																				X	X
	SWL3-1																				X	X
	SWL3-2																				X	X
	SWL3-3																				X	X
	QC40				3xP1xG																	
	QC41				4xP1xG		X	X	X	X	X										X	X
	QC43				1xP																	
	QC44				1xP																	

Dissolved only
Dissolved

RELINQUISHED BY			RECEIVED BY		
Name: <u>H. Carter</u>	Date: <u>16/2/16</u>	→	Name: <u>Kelly Sims</u>	Date: <u>16/2/16</u>	
Coffey Environments	Time: <u>1500</u>		Company: <u>Eurofins - Perth</u>	Time: <u>3:30pm</u>	
Name:	Date:	→	Name:	Date:	
Company:	Time:		Company:	Time:	

chilled - courier



*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

489413

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: **MGT**
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW9	17/12/16	AM	Water	3XP, 1CA	5 days	X	X	X	X	X	X						
	MW55	↓	↓	↓	" "		X	X	X	X	X	X	X	X				
	QL43	↓	↓	↓	1XP				X									
	MW40	18/12/16			3XP, 1CA		X	X	X	X	X	X						
	MW41	↓	↓	↓	↓													
	MW46	↓	↓	↓	↓													
	MW47	↓	↓	↓	↓													
	MW45	↓	↓	↓	↓													
	SWL18-1	↓	↓	↓	4XP,													
	SWL18-2	↓	↓	↓	↓													
	SWL19-1	↓	↓	↓	↓													
	SWL19-2	↓	↓	↓	↓													
	SWL19-3	↓	↓	↓	↓													
	SWL17-1	↓	↓	↓	↓		X	X	X	X	X	X						
	SWL17-2	↓	↓	↓	↓													
	SWL17-3	↓	↓	↓	↓													

Dissolved Only

<p>RELINQUISHED BY</p> <p>Name: <i>[Signature]</i> Date: 2:30pm → Coffey Environments Time: →</p>	<p>RECEIVED BY</p> <p>Name: Kelly Jones Date: 18/12/16 Company: Eugenia WA Time: 3pm</p>	<p>Chilled courier <input checked="" type="checkbox"/> sealed <input checked="" type="checkbox"/></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">489774</div>
<p>Name: Date: → Company: Time: →</p>	<p>Name: <i>[Signature]</i> Date: 18/12 Company: MGT Time: 8:11am</p>	

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: **MGT**
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteri	NOTES
	MW48	18/2/16	AM	Water	3XP, 1XA	5 days	X	X	X	X	X	X						
	MW49	↓	↓	↓	↓ ↓	↓	X	X	X	X	X	X						
	MW43	↓	↓	↓	↓ ↓	↓	X	X	X	X	X	X						
	MW44	↓	↓	↓	↓ ↓	↓	X	X	X	X	X	X						
	AL49	↓	↓	↓	1XP	↓		X	X									
	AL50	↓	↓	↓	1XP	↓		X	X									Dissolved only " "

RELINQUISHED BY

RECEIVED BY

Name: <i>[Signature]</i>	Date: 2:30pm →	Name: Kelly Souty	Date: 18/2/16
Coffey Environments	Time:	Company: Eurofins Perth	Time: 3pm
Name:	Date: →	Name:	Date:
Company:	Time:	Company:	Time:

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
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Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section										NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity		E.coli, thermotolerant bacter			
	MW16	19/2/16	AM	WATER	3XP 1XG	5 days	X	X	X	X	X										
	MW17																				
	MW18																				
	MW19																				
	MW20																				
	MW21																				
	MW22																				
	MW23																				
	QC52				1XP		X	X	X	X	X										
	QC53				1XP				X												
	MW24				3XP, 1XA		X	X	X	X	X										
	MW25																				
	MW26																				
	MW27																				
	MW28						X	X	X	X	X										
	QC51						X	X	X	X	X										

Dissolved Only

RELINQUISHED BY			RECEIVED BY		
Name: H. Carter	Date: 19/2/16	→	Name: Julian Soars	Date: 19/2/16	<input type="checkbox"/>
Company: Coffey Environments	Time:		Company: Evcofins WA	Time: 4:10pm	<input type="checkbox"/>
Name:	Date:	→	Name: Jimmy	Date: 22/2	<input type="checkbox"/>
Company:	Time:		Company: MGT/EF	Time: 1:00pm	<input type="checkbox"/>

489975

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section											
Project Name: -_Baseline GW_ SW Monitori Laboratory:							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name: Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW42	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW39	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW38	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW37	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW36	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW35	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW34	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW33	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW32	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW31	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW30	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW29	22/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	SWL15-1	22/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL15-2	22/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	QC54	22/02/2016	AM	Water	1 x P	5 days			X									
	QC55	22/02/2016	AM	Water	1 x P	5 days			X									

Robert Johnston
 23/02/16
 Eurofins MGT

Dissolved Only
Dissolved Only

RELINQUISHED BY			RECEIVED BY		
Name: _____	Date: _____	→	Name: <i>Kelley Jones</i>	Date: <i>22/2/16</i>	
Coffey Environments	Time: _____		Company: <i>Eurofins WA</i>	Time: <i>22/2/16 2:30pm</i>	<input checked="" type="checkbox"/>
Name: _____	Date: _____	→	Name: _____	Date: _____	<input checked="" type="checkbox"/>
Company: _____	Time: _____		Company: _____	Time: _____	<input checked="" type="checkbox"/>

490092

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com


Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section																										
Project Name: NL_Baseline GW_SW Monitoring Laboratory:							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES															
Sampler's Name: Project Manager: Richelle Bunbury																																	
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																																	
Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L																																	
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																																	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)																											
	MW15	23/02/2016	AM	Water	3 x P, 1 x A	5 days													X	X	X	X	X	X									
	MW14	23/02/2016	AM	Water	3 x P, 1 x A	5 days													X	X	X	X	X	X									
	MW13	23/02/2016	AM	Water	3 x P, 1 x A	5 days													X	X	X	X	X	X									
	MW12	23/02/2016	AM	Water	3 x P, 1 x A	5 days													X	X	X	X	X	X									
	MW11	23/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X																					
	MW10	23/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X																					
	MW8	23/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X																					
	MW7	23/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X																					
	MW5	23/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X																					
	SWL1-1	23/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X																
	QC56	23/02/2016	AM	Water	1 x P	5 days			X												Dissolved Only												
	QC57	23/02/2016	AM	Water	1 x P	5 days			X													Dissolved Only											

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments	Time:		Company:	Time:	<input type="checkbox"/>		
Name:	Date:	→	Name:	Date:	<input type="checkbox"/>		
Company:	Time:		Company:	Time:	<input type="checkbox"/>		

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

490272

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

	Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com																																																																																																																																																																																																								
Project No: ENAUPERT04483AA Task No: Monitoring Event 2 Project Name: NL_Baseline GW_SW Monitoring Laboratory: Sampler's Name: _____ Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN	Analysis Request Section										<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">NOTES</div>																																																																																																																																																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Lab No.</th> <th style="width: 15%;">Sample ID</th> <th style="width: 10%;">Sample Date</th> <th style="width: 5%;">Time</th> <th style="width: 10%;">Matrix (Soil...etc)</th> <th style="width: 15%;">Container Type & Preservative*</th> <th style="width: 10%;">T-A-T (specify)</th> <th style="width: 5%;">Physical Parameters (pH, EC, TDS)</th> <th style="width: 5%;">Major Anions and Cations</th> <th style="width: 5%;">Total and dissolved metals</th> <th style="width: 5%;">Nitrogens - speciated</th> <th style="width: 5%;">Total Phosphorus</th> <th style="width: 5%;">Total reactive phosphorus</th> <th style="width: 5%;">B1</th> <th style="width: 5%;">OPP/OCF (trace)</th> <th style="width: 5%;">SVOC</th> <th style="width: 5%;">Turbidity</th> <th style="width: 5%;">E.coli, thermotolerant bacter</th> </tr> </thead> <tbody> <tr> <td></td> <td>MW54</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>3 x P, 1 x A</td> <td style="background-color: #FFDAB9;">5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>MW53</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>3 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>MW52</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>3 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>MW51</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>3 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>MW50</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>3 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>SWL21-1</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>4 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td></td> <td>SWL21-2</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>4 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td></td> <td>SWL21-3</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>4 x P, 1 x A</td> <td>5 days</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td></td> <td>QC58</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>1 x P</td> <td>5 days</td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">Dissolved Only</td> </tr> <tr> <td></td> <td>QC59</td> <td>24/02/2016</td> <td>AM</td> <td>Water</td> <td>1 x P</td> <td>5 days</td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">Dissolved Only</td> </tr> </tbody> </table>	Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals		Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter		MW54	24/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X							MW53	24/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X							MW52	24/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X							MW51	24/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X							MW50	24/02/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X							SWL21-1	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X		SWL21-2	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X		SWL21-3	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X		QC58	24/02/2016	AM	Water	1 x P	5 days			X									Dissolved Only		QC59	24/02/2016	AM	Water	1 x P	5 days			X									Dissolved Only
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated		Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter																																																																																																																																																																																							
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	SWL21-1	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X		X	X				X	X																																																																																																																																																																																							
	SWL21-2	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X		X	X				X	X																																																																																																																																																																																							
	SWL21-3	24/02/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X																																																																																																																																																																																								
	QC58	24/02/2016	AM	Water	1 x P	5 days			X									Dissolved Only																																																																																																																																																																																							
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RELINQUISHED BY							RECEIVED BY																																																																																																																																																																																																		
Name: _____ Date: _____ → Coffey Environments Time: _____							Name: _____ Date: _____ Company: _____ Time: _____																																																																																																																																																																																																		
Name: _____ Date: _____ → Company: _____ Time: _____							Name: Liam Date: 25/2/16 Company: EF/MEIT Time: 8:21am																																																																																																																																																																																																		
490559 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <div style="border: 1px solid black; width: 50px; height: 40px; display: inline-block; margin-top: 10px;"></div>																																																																																																																																																																																																									

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

EnviroSampleVIC

From: EnviroSampleVIC
Sent: Thursday, 25 February 2016 9:35 AM
To: richelle_bunbury@coffey.com
Cc: Natalie Krasselt
Subject: ENAUPERT04483AA
Attachments: 83.pdf

Importance: High

Hi Richelle,

Please see attached for issues and advise.

Nat-you may need to take photos to help resolve.

Please note these has micro on it so it needs actioning asap.

Anthony

Enquiries VIC

Eurofins | mgt

2-5 Kingston Town Close

OAKLEIGH VIC 3166

AUSTRALIA

Fax : +61385645090

Email : EnviroSampleVic@eurofins.com.au

Website : environment.eurofins.com.au

Metrological Traceability - what is it? Find out more by reading Eurofins | mgt's EnviroNote by clicking [here](#)

490559

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



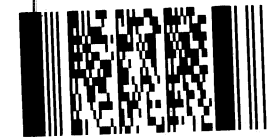
Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: **ACS**
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
1	QC46	18/12/16	AM	Water	3xP, 1xA	5 days	X	X	X	X	X	X						
2	QC47	↓	↓	↓	↓ ↓	↓	X	X	X	X	X	X						
3	QC48	↓	↓	↓	↓ ↓	↓	X	X	X	X	X	X						

Environmental Division
 Perth
 Work Order Reference
EP1601429



Telephone : + 61-8-9209 7655

<p>REINQUISHED BY</p> <p>Name: <i>[Signature]</i> Date: 18/12/16 → Coffey Environments Time: 2:00 pm</p>	<p>RECEIVED BY</p> <p>Name: <i>my Wastel</i> Date: 18/12/16 Company: <i>ACS</i> Time: 16h5</p>
<p>Name: Date: → Company: Time:</p>	<p>Name: Date: Company: Time:</p>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 2
Project Name:	JL_Baseline GW_SW Monitorin Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES					
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter						
	MW1	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW2	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW3	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW4	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW5	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW6	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW7	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	MW8	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X											
	SWL1-1	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL2-1	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL2-2	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL2-3	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL3-1	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL3-2	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	SWL3-3	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X								X	X		
	MW55	15/03/2016	AM	Water	2 x V, 1 x A, 3 x P	5 days	X	X	X	X	X	X	X	X	X								Only if enough sample
	QC60	15/03/2016	AM	Water	1 x P	5 days			X														Dissolved Metals Only
	QC61	15/03/2016	AM	Water	1 x P	5 days			X														Dissolved Metals Only
	QC63	15/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X											

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <i>Willy Barts</i> Date: <i>15/3/16</i> Company: <i>Eurofins WA</i> Time: <i>3pm</i>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 2	Analysis Request Section											
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT			Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name:	Project Manager: Richelle Bunbury														
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW54	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW53	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW52	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW51	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW50	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW49	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW48	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW44	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW43	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	MW42	16/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X						
	SWL19-1	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL19-2	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL19-3	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL20-1	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL20-2	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	
	SWL20-3	16/03/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X	X				X	X	

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments			TARUN	17/3/16			<input type="checkbox"/>
	Time:		Company: EP/MGT	Time: 8:50AM			<input type="checkbox"/>
Name:	Date:	→	Name:	Date:			<input type="checkbox"/>
Company:	Time:		Company:	Time:			<input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

493200

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 2					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: auto;">NOTES</div>
Project Name: L_Baseline GW_SW Monitorir Laboratory:																		
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW28	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW27	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW26	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW25	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW24	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW23	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW18	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW16	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW15	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW14	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW13	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW12	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW11	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW10	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW9	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	QC71	17/03/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	QC70	17/03/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	QC69	17/03/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <i>Kelly Soons</i> Date: <i>17/3</i> Company: <i>Eurolins WA</i> Time: <i>3pm</i> <i>Chilled</i>

TARUN
18/3/16 8:45AM

493525

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT Sampler's Name: Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							Analysis Request Section											<div style="border: 1px solid black; padding: 5px;">NOTES</div>
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	
	QC72	18/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC73	18/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	MW17	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW39	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW38	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW37	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW36	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW35	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW34	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW33	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW32	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW31	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW30	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW29	18/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name: <i>Kelly Sans</i>	Date: <i>18/3/16</i>	
Coffey Environments	Time:		Company: <i>Eurofins WA</i>	Time: <i>3:30pm</i>	<i>U14m</i> <i>EF/ment</i> <i>21/3/16 8:28am</i> <div style="border: 1px solid black; padding: 2px; display: inline-block;">493785</div>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW19	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW20	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW21	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW22	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW46	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	SWL15-1	21/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL15-2	21/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL18-2	21/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	QC74	21/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC75	21/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC76	21/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <i>Catherine EF/mat</i> Date: <i>21/3</i> Company: _____ Time: <i>8:46 am</i>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

493825

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT

Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Ca LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW45	22/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW47	22/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW40	22/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW41	22/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X				X	X	
	SWL17-1	22/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL17-2	22/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL17-3	22/03/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	QC77	22/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC78	22/03/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only

RELINQUISHED BY
RECEIVED BY

Name: _____ Date: _____ Coffey Environments Time: _____	➔	Name: <i>Callista EF/mgt</i> Date: <i>23/3</i> Company: _____ Time: <i>8:53 am</i>	<input type="checkbox"/> <input type="checkbox"/>
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*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

494000

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: BURSWOOD

Report Results to:

Mobile:

Email:

@coffey.com

Invoices to:

Phone:

Email:

@coffey.com

Project No: ENAUABTF05363AA Task No:

Project Name: WP Laboratory: MPL

Sampler's Name: DM Project Manager: SH

Special Instructions:

Relevant agreements: Eurofins COF_ENAUABTF00952AA_MSA1 ; ALS COF_ENAUABTF00952AA_MSA2 and SGS COF_ENAUABTF00952AA_MSA3

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)
19	SBI-0-0-1	17/12		S		48hr
20	SBI-0-5-0-6					
21	SBI-1-1-1-2					
22	SBI-1-8-1-9					
23	QCI					
① 24	QCI* BWD 0-1-0-3					Std

<div style="border: 1px solid black; padding: 5px; display: inline-block;"> TRH, PCBs, metals </div>									
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> NOTES </div>									
Forward to ALS									

Environmental Division
Perth
Work Order Reference
EP1517263



Telephone : + 61-8-9209 7655

RELINQUISHED BY

Name: D. Marsh Date: 17/12/15 →

Coffey Environments Time: 2pm

Name: Date: →

Company: Time: →

RECEIVED BY

Name: Meredith Date: 17-12-15

Company: MPL Time: 1530

Name: Josha Rees Date: 17/12/15

Company: ALU Time: 17:00

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition

All Documentation is in Proper Order

Samples Received Properly Chilled 14-6°C

Lab. Ref/Batch No.

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock Bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative, OP - Other Preservative

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 5					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
Project Name: Baseline GW_SW Monito Laboratory:		MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW10	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW1	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW2	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW3	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW4	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW5	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW6	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW7	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	MW8	11/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X							
	SWL1-1	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL2-1	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL2-2	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL2-3	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL3-1	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL3-2	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	SWL3-3	11/04/2016	AM	Water	4 x P, 1 x A	5 days	X	X	X	X	X				X	X		
	MW55	11/04/2016	AM	Water	2 x P, 1 x A	5 days	X	X	X	X	X	X	X	X				Limited water, analysis what u can

RELINQUISHED BY			RECEIVED BY		
Name: Coffey Environments	Date: _____	Time: _____	Name: <u>Kelly Bous</u>	Date: <u>11/4/16</u>	Time: <u>3pm</u>
Company: _____	Date: _____	Time: _____	Company: <u>Ecofins WA</u>	Date: _____	Time: _____

496321
 5/12.4.16

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

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 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 2	Analysis Request Section											
Project Name:	JL_Baseline GW_SW Monitorin Laboratory:		MGT	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name:	Project Manager:		Richelle Bunbury												
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW54	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW53	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW52	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW51	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW50	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW49	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW48	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW44	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW43	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW42	12/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	SWL21-1	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL21-2	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL21-3	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL19-1	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL19-2	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL19-3	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	QC84	12/04/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC85	12/04/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC86	12/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X						

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <u>Kelly Jones</u> Date: <u>12/14</u> Company: <u>Eurofins WA</u> Time: <u>4:30pm</u>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

L196514

Catherine EF/mat 13/14 8:48 am

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section											
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteri	NOTES
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.0005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW46	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW47	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW48	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW39	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW38	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW37	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW36	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	SWL18-1	13/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X			X	X		
	SWL18-2	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL18-3	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL15-1	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL15-2	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL15-3	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL20-1	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL20-2	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	SWL20-3	13/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X			X	X		
	QC87	13/04/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	QC88	13/04/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	

RELINQUISHED BY			RECEIVED BY		
Name: Coffey Environments	Date: _____	Time: _____	Name: Kelly Soars	Date: 13/4/16	Time: 3.30pm
			Company: Eumfins WA		
9/11/16 1414 8.45 496717					

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 5							Analysis Request Section											
Project Name: NL_Baseline GW_ SW Monitoring Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">NOTES</div>
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>												
	SWL16-1	13/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X					X	X
	SWL16-3	13/04/2016	AM	Water	3 x P, 1 x A	5 days	X	X	X	X	X	X					X	X

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments	Time:		Company:	Time:	<input type="checkbox"/>		
Name:	Date:	→	Name:	Date:	<input type="checkbox"/>		
Company:	Time:		Company:	Time:	<input type="checkbox"/>		

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Steven Borg

From: Richelle Bunbury <Richelle.Bunbury@coffey.com>
Sent: Thursday, 14 April 2016 11:35 AM
To: Natalie Krasselt
Cc: Harriet Carter; Chris Jowsey
Subject: RE: Coffey issues

Hi Natalie,

On the COC please include MW45 and remove MW48. MW45 will be analysed for the same parameters.

Ill follow up on where abouts SWL15-3 is.

Do we need to add a note on the COC for the laboratory to filter the metals?

Kind Regards
Richelle

From: Natalie Krasselt [<mailto:NatalieKrasselt@eurofins.com>]
Sent: Thursday, 14 April 2016 9:28 AM
To: Richelle Bunbury
Cc: Harriet Carter
Subject: FW: Coffey issues

Hi Richelle,

There are a few issues with the bottles for the NL job – COC attached an issues attached (points 3 and 4). Can you please advise as soon as possible?

Kind regards,

Natalie Krasselt
Phone : +61 3 8564 5051
Email : NatalieKrasselt@eurofins.com

From: Steven Borg
Sent: Thursday, 14 April 2016 11:11 AM
To: Natalie Krasselt
Subject: Coffey issues

Hi Nat COC attached with issue

Steven Borg

Eurofins | mgt
2-5 Kingston Town Close
OAKLEIGH VIC 3166
AUSTRALIA
Phone : +61 3 8564 5000
Fax : +61 3 8564 5090

Email : StevenBorg@eurofins.com
Website : environment.eurofins.com.au

Metrological Traceability – what is it? Find out more by reading Eurofins | mgt's EnviroNote by clicking [here](#)

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 5
 Project Name: IL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: C.J & H.C Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW35	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW34	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW33	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW32	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW31	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW30	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW29	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW22	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW21	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW20	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW19	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW18	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW17	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW16	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW40	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW41	14/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	SWL17-1	14/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL17-2	14/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	
	SWL17-3	14/04/2016	AM	Water	1 x G, 4 x P	5 days	X	X	X	X	X	X				X	X	

RELINQUISHED BY **RECEIVED BY**

Name: _____ Date: _____ Coffey Environments Time: _____	Name: _____ Date: _____ Company: _____ Time: _____
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*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Robert Johnston
15/04/16
Eurofins MGT
496981

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT Sampler's Name: Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							Analysis Request Section											
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	SVOC	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW28	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW27	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW26	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW25	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW24	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW23	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW15	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW14	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW13	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW12	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW11	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	MW9	15/04/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X						
	QC95	15/04/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC96	15/04/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only

RELINQUISHED BY		RECEIVED BY	
Name: <u>FA</u>	Date: _____	Name: <u>Kelly Sours</u>	Date: <u>15/4/16</u>
Coffey Environments	Time: _____	Company: <u>Eurofins WA</u>	Time: <u>9pm</u>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Taken 15/4/16 8:37am

497204



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 6
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW5	2/5/16	AM	Water	4x P1x A2x V	5 days	X	X	X	X	X	X	X			X	X	
	MW6	↓	↓	↓	↓	↓	X	X	X	X	X	X	X			X	X	
	MW7	↓	↓	↓	↓	↓	X	X	X	X	X	X	X			X	X	
	MW8	↓	↓	↓	↓	↓	X	X	X	X	X	X	X			X	X	

RELINQUISHED BY		RECEIVED BY	
Name: <u>H. Carter</u>	Date: <u>2/5/16</u>	Name: <u>Felleyson</u>	Date: <u>2/5/16</u>
Coffey Environments	Time: <u>11:00</u>	Company: <u>Ecofins WA</u>	Time: <u>3:00</u>
Name:	Date:	Name:	Date:
Company:	Time:	Company: <u>MGT</u>	Time: <u>3:36</u>

492878

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section												
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES	
Sampler's Name: Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	MW29	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	MW30	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	MW31	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	MW32	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	MW33	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	MW34	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X					
	SWL15-1	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X	X	X			
	SWL15-2	15/03/2016	AM	Water	1 x G, 3 x P	5 days	X	X	X	X	X	X	X	X	X	X			
	QC99	15/03/2016	AM	Water	1 x G, 4 x P	5 days			X								Dissolved Metals Only		
	QC100	15/03/2016	AM	Water	1 x G, 4 x P	5 days			X								Dissolved Metals Only		

RELINQUISHED BY			RECEIVED BY		
Name: _____	Date: _____	→	Name: <i>Kelly Jones</i>	Date: <i>3/5/16</i>	
Coffey Environments	Time: _____		Company: <i>EUROFINS MGT WA</i>	Time: <i>1:30pm</i>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

499049

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: _____ Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW54	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW53	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW52	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW51	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW50	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW49	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW48	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW44	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	MW43	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X			
	SWL21-1	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL21-2	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL21-3	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL20-1	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL20-2	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL20-3	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL19-1	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL19-2	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	
	SWL19-3	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	

RELINQUISHED BY
 Name: _____ Date: _____
 Coffey Environments Time: _____

RECEIVED BY
 Name: *[Signature]* Date: *5/5*
 Company: *[Signature]* Time: *7:59a*

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

499243

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section										NOTES
Project No:	Task No:	Project Name:	Project Manager:	Special Instructions:	Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L	Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)											
	SWL18-1	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X	X	X
	SWL18-2	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X	X	X
	SWL18-3	4/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X	X	X
	MW51	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X	X	X
	QC101	4/05/2016	AM	Water	1 x P	5 days			X								
	QC102	4/05/2016	AM	Water	1 x P	5 days			X								
	QC103	4/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X		

COFFEE

05 MAY 16 07:59

RB

5-2

105

RELINQUISHED BY		RECEIVED BY	
Name: _____	Date: _____	Name: <i>Kelly Jones</i>	Date: <i>4/15/16</i>
Company: Coffey Environments	Time: _____	Company: <i>Envirofins MAT</i>	Time: <i>3:45pm</i>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section												
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteri	NOTES	
Sampler's Name: Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	MW46	5/05/2015	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW47	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW45	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW42	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW41	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW40	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW39	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW38	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW37	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW36	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	MW35	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X				
	SWL17-1	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
	SWL17-2	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
	SWL17-3	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
	SWL16-1	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
	SWL16-2	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
	SWL16-3	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X		
RELINQUISHED BY							RECEIVED BY												
Name: Date: →							Name: Kelly Jones Date: 5/5/16							<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>					
Coffey Environments Time:							Company: Eurofins WA Time: 3:30pm												
<p>*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative</p>																			

Robert Johnston
 06/05/16
 Eurofins MGT
 499491

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT Sampler's Name: Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							Analysis Request Section											
Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteri	NOTES
	QC112	5/05/2015	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X				
	QC107	5/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X				
	QC104	5/05/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC105	5/05/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
RELINQUISHED BY							RECEIVED BY											
Name: Date: → Coffey Environments Time:							Name: Date: Company: Time:											
*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative																		

GOLD

DB

05 MAY 18 09:11

13.4

172

15.4

AU02_USR_LAB00020

From: Kelly Jones
Sent: Friday, 6 May 2016 11:41 AM
To: AU02_USR_LAB00020
Cc: Natalie Krasselt
Subject: FW: 2 extra samples QC106 & QC111

Kelly Jones
Phone : +61 8 9251 9692
Email : KellyJones@eurofins.com

From: Chris Jowsey [mailto:Chris.Jowsey@coffey.com]
Sent: Friday, 6 May 2016 9:39 AM
To: Kelly Jones
Subject: Re: 2 extra samples QC106 & QC111

If not sorry. Please analyse per **sw16-2**. Thanks

Kelly Jones <KellyJones@eurofins.com> wrote:

Hi Chris

Please advise the testing required on the following samples **QC106 & QC111**.

Kelly Jones
Assistant Analytical Services Manager

Eurofins | mgt
Unit 2, 91 Leach Hwy
KEWDALE WA 6105
AUSTRALIA
Phone : +61 8 9251 9692
Mobile : +61 4 1885 6576

Email : KellyJones@eurofins.com
Website : environment.eurofins.com.au

Metrological Traceability – what is it? Find out more by reading Eurofins | mgt's EnviroNote by clicking [here](#)

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: FKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES	
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated +TKA	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter		
	MW1	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW2	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW3	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW4	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW17	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW19	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW20	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW21	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	MW22	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			
	SWL1-1	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL2-1	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL2-2	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL2-3	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL3-1	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL3-2	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	SWL3-3	9/05/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
	QC116	9/05/2016	AM	Water	1 x P	5 days			X										Dissolved metals only
	QC117	9/05/2016	AM	Water	1 x P	5 days			X										Dissolved metals only
	QC118	9/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X	X	X	X			

RELINQUISHED BY		RECEIVED BY	
Name: Coffey Environments	Date: _____ Time: _____	Name: <i>Kathy Lee</i>	Date: <i>9/5/16</i> Time: <i>3:00pm</i> <i>Chilled</i>

9/5/16
1:45
8:06am
49798

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Steven Borg

From: AU02_USR_LAB00020
Sent: Tuesday, 10 May 2016 3:15 PM
To: Steven Borg
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 499798 : Site NL_BASELINE GW_SW MONITORING (ENAUPERT04483AA)
Attachments: 499798_COC.pdf; 499798_sample_receipt_coc.pdf; 499798_summary.pdf

Enviro Sample VIC
Phone: +61 3 8564 5000
Email: EnviroSampleVic@eurofins.com

-----Original Message-----

From: Natalie Krasselt [<mailto:NatalieKrasselt@eurofins.com>]
Sent: Tuesday, 10 May 2016 3:02 PM
To: envirosamplevic@eurofins.com.au
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 499798 : Site NL_BASELINE GW_SW MONITORING (ENAUPERT04483AA)

Natalie Krasselt
Phone : +61 3 8564 5051
Email : NatalieKrasselt@eurofins.com

-----Original Message-----

From: Chris Jowsey [<mailto:Chris.Jowsey@coffey.com>]
Sent: Tuesday, 10 May 2016 2:53 PM
To: NatalieKrasselt@eurofins.com.au
Subject: FW: Eurofins | mgt Sample Receipt Advice - Report 499798 : Site NL_BASELINE GW_SW MONITORING (ENAUPERT04483AA)

Hi Natalie,

Please analyse MW55 as per MW1.

Cheers,

Chris Jowsey
Environmental Scientist

Suite 2, 53 Burswood Rd
BURSWOOD WA 6100
t: +61 8 9355 7100
m: +61 409 781 346

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100

Report Results to: Richelle Bunbury, Harriet Carter

Mobile: (08) 9269 6200

Email: Richelle.Bunbury@coffey.com

Invoices to: Accounts.Burb@coffey.com

Phone:

Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 5

Analysis Request Section

Project Name: NL_Baseline GW_SW Monitoring Laboratory:

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	SVOC	Turbidity	E.coli, thermotolerant bacter	NOTES
1	QC107	5/05/2015	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X					
2	QC108	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X					
3	QC109	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X					
4	QC110	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X					
5	QC112	5/05/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X					

RELINQUISHED BY

RECEIVED BY

Name: _____ Date: _____

Coffey Environments Time: _____

Name: _____ Date: _____

Company: _____ Time: _____

Name: *m. Carter* Date: *5/5/16*

Company: *SAES* Time: *16:45*

Name: _____ Date: _____

Company: _____ Time: _____

Work Order Reference
EP1604031



Telephone : + 61 8 9209 7665

Environmental Division
Perth

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: arriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2

Project Name: IL_Baseline GW_SW Monitorin Laboratory: MGT

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES			
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria				
	MW54	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X						
	MW53	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X						
	MW52	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X						
	MW51	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X						
	MW50	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X						
	SWL21-1	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	SWL21-2	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	SWL21-3	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	SWL20-1	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	SWL20-2	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	SWL20-3	21/06/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				
	QC119	21/06/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days			X												Dissolved Metals Only
	QC120	21/06/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days			X												Dissolved Metals Only
	QC121	21/06/2016	AM	Water	5 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X			X	X	X				

RELINQUISHED BY
RECEIVED BY

Name: _____ Coffey Environments	Date: _____ Time: _____	→	Name: <i>Billy Jones</i> Company: <i>Eucofrik WA</i>	Chilled	Date: <i>21/6/16</i> Time: <i>3:15pm</i>	<i>[Signature]</i> 21/6 9:19	<input type="checkbox"/> <input checked="" type="checkbox"/>
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*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: riet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2							Analysis Request Section											
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW49	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW48	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW47	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW46	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW45	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW44	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW43	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW42	22/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL19-1	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-2	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-3	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-1	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-2	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-3	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-1	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-2	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-3	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC127 7	22/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

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Name: _____ Date: _____ Coffey Environments Time: _____	Name: <i>[Signature]</i> Date: <i>23/6</i> Company: <i>[Signature]</i> Time: <i>8:28am</i>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

505399

RECEIVED BY: Tom Kok - Eurofins Perth
 DATE/TIME: 22/6/16 3:30 PM

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 2					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
Project Name: JL_Baseline GW_SW Monitorin Laboratory:		MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW39	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW38	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW37	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW36	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW35	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW34	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW33	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW32	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW31	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW30	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW29	23/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	SWL16-1	23/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL16-2	23/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL16-3	23/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL15-1	23/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL15-2	23/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	QC129	23/06/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	QC130	23/06/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	

RELINQUISHED BY		RECEIVED BY	
Name: <u>ag</u>	Date: _____	Name: <u>TARUN</u>	Date: <u>24/6/16</u>
Coffey Environments	Time: _____	Company: <u>EP/MGT</u>	Time: <u>8:08am</u>

505554

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

RECEIVED BY: Tom Kok - Eurofins Perth
 DATE/TIME: 23/6/16 3:30pm

DespatchWA

From: Kelly Jones <KellyJones@eurofins.com>
Sent: Thursday, 23 June 2016 2:23 PM
To: DespatchWA
Subject: FW: Esky Pick Up

Kelly Jones
Phone : +61 8 9251 9692
Email : KellyJones@eurofins.com

From: Chris Jowsey [<mailto:Chris.Jowsey@coffey.com>]
Sent: Thursday, 23 June 2016 2:13 PM
To: Kelly Jones
Subject: ~~Esky Pick Up~~

Hi Kelly,

~~Can I please have a pick up for 2 eskys. Is ready to go.~~

Also I think from yesterday's batch of **Northlink samples** I may have sent **QC124** and was not on the COC? Please analysis this as per **MW45**.

Please send email confirmation.

Cheers,

Chris Jowsey
Environmental Scientist

Suite 2, 53 Burswood Rd
BURSWOOD WA 6100

t: +61 8 9355 7100
m: +61 409 781 346



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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Reference No. _____



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: riet.Carter@coffey.com

Project No: ENAUPERT04483AA **Task No:** Monitoring Event 2
Project Name: JL_Baseline GW_SW Monitorin Laboratory: **MGT**
Sampler's Name: **Project Manager:** Richelle Bunbury
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section										
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW22	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW21	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW20	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW19	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW18	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW17	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW16	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW15	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW14	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW13	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW12	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW11	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW10	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW9	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW8	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW7	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC131	24/06/2016	AM	Water	4 x P	5 days			X									Dissolved Metals Only
	QC132	24/06/2016	AM	Water	4 x P	5 days			X									Dissolved Metals Only
	QC133	24/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: JIMMY Date: 27/6 Company: EFMGT Time: 3:00

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

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 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: riet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT

Sampler's Name: _____ Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section												NOTES					
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter							
	MW27	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW26	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW25	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW24	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW23	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW55	27/06/2015	AM	Water	4 x P, 1 A, 2 x V	5 days	X	X	X	X	X	X	X		X									
	MW2	27/06/2015	AM	Water	4 x P	5 days	X	X	X	X	X	X			X									
	MW3	27/06/2015	AM	Water	4 x P, 1 A, 2 x V	5 days	X	X	X	X	X	X	X		X									
	SWL2-1	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL2-2	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL2-3	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL3-1	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL3-2	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL3-3	27/06/2015	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X							
	QC134	27/06/2015	AM	Water	5 x P	5 days				X													Dissolved Metals Only	
	QC135	27/06/2015	AM	Water	5 x P	5 days				X														Dissolved Metals Only

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: TOM KOK - GNEPPINS PORTH Date: 27/6/16 Company: _____ Time: 2:30pm

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

5059167
TARUN 28/6/16 8:28am

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: riet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 2	Analysis Request Section					
Project Name:	JL_Baseline GW_SW Monitorin Laboratory:			MGT					
Sampler's Name:	Project Manager:			Richelle Bunbury					
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn								
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L									
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN									

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW1	28/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW4	28/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW5	28/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW6	28/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL1-1	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1-2	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1-3	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4-1	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4-2	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4-3	28/06/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC138	28/06/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC136	28/06/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC137	28/06/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____	Name: _____ Date: _____
Coffey Environments Time: _____	Company: _____ Time: _____

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Coffey Environments
RECEIVED BY: Tom Kok - Eurofins
DATE/TIME: 28/6/16 2:30 PM
Robert Johnston 29/06/16 Eurofins MGT
Version: 5
50609
Issue Date: 24/09/2013

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: riet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 2	Analysis Request Section											
Project Name:	JL_Baseline GW_SW Monitorin Laboratory: MGT			Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name:	Project Manager: Richelle Bunbury														
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW54	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW53	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW52	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW51	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW50	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW49	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW48	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL21-1	12/07/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL21-2	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL21-3	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-1	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-2	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-3	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC139	12/07/2016	AM	Water	5 x P	5 days			X									Dissolved Metals Only
	QC140	12/07/2016	AM	Water	5 x P	5 days			X									Dissolved Metals Only
	QC141	12/07/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			

RELINQUISHED BY	RECEIVED BY	
Name: _____ Date: _____	Name: <i>Kelly Jones</i> Date: <i>12/7/16</i>	<i>ARR 13/7/16 8:15 AM</i> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Coffey Environments Time: _____	Company: <i>Euro Fins WA</i> Time: <i>3:15 pm</i>	

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Reference No: _____
 Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter
 Invoices to: Accounts.Burb@coffey.com
 Mobile: (08) 9269 6200
 Email: Richelle.Bunbury@coffey.com
 Phone: _____
 Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: MGT
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: Richelle Bunbury
 Sampler's Name: _____ Project Manager: _____
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section											
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
1	MW47	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
2	MW46	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
3	MW45	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
4	MW44	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
5	MW43	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
6	MW42	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
7	MW41	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X	X	X	
8	MW40	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
9	SWL18-1	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
10	SWL18-2	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
11	SWL18-3	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
12	SWL17-1	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
13	SWL17-2	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
14	SWL17-3	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	Dissolved metals Only
15	QC147	13/07/2016	AM	Water	1 x P	5 days				X								Dissolved metals Only
16	QC142	13/07/2016	AM	Water	1 x P	5 days				X								
17	QC143	13/07/2016	AM	Water	1 x P	5 days				X								

RELINQUISHED BY	RECEIVED BY	
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <u>Kelly Jones</u> Date: <u>13/7/16</u> Company: <u>EUROFINS WA</u> Time: <u>3:20 pm</u>	<input type="checkbox"/> <input type="checkbox"/>

507847

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, Sodium Thiosulfate, NP - No Preservative
 Issue Date: 24/09/2013

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event July Project Name: \L_Baseline GW_SW Monitorin Laboratory: MGT Sampler's Name: Project Manager: Richelle Bunbury Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							Analysis Request Section											
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW39	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW38	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW37	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW36	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW35	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW34	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW33	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW32	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW31	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW30	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	MW29	14/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X		X				
	SWL16-1	14/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL16-2	14/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL16-3	14/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL15-1	14/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL15-2	14/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X		X	X	X		
	QC149	14/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC150	14/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: _____ Date: _____ Company: _____ Time: _____

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

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 SU 15.7.16

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event July							Analysis Request Section															
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES				
Sampler's Name: Project Manager: Richelle Bunbury																						
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																						
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																						
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																						
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)																
	MW22	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW21	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW20	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW19	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW18	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW17	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW16	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW15	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW14	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW13	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW12	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	MW11	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	QC151	13/07/2016	AM	Water	1 x P	5 days			X											Dissolved metals Only		
	QC152	13/07/2016	AM	Water	1 x P	5 days			X											Dissolved metals Only		
	QC153	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							

RELINQUISHED BY			RECEIVED BY		
Name: _____	Date: _____	→	Name: <i>ARR</i>	Date: <i>18/7/16</i>	<input checked="" type="checkbox"/>
Coffey Environments	Time: _____		Company: <i>EUROFINS</i>	Time: <i>8:20 AM</i>	<input checked="" type="checkbox"/>

508202

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event July
 Project Name: IL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section											
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW10	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW9	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW8	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW7	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW6	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW5	18/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL20-1	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20-2	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20-3	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1-1	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1-2	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1-3	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC15 4	18/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC15 4 5	18/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	SWL5-1	18/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ Coffey Environments Time: _____	Name: <i>Kelly Jones</i> Date: <i>18/7/16</i> Company: <i>Eurofins WA</i> Time: <i>2:30pm</i>

508370

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Robert Johnston 19/07/16 Eurofins MGT

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event July
Project Name:	JL_Baseline GW_SW Monitorin Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	
	MW28	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW27	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW26	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW25	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW24	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW23	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW4	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW3	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW2	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW1	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW55	19/07/2016	AM	Water	6 x P, 2 x V, 1 x A	5 days	X	X	X	X	X	X	X	X	X			
	SWL4-1	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4-2	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4-3	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-1	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-2	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-3	19/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____	Name: <u>Kelly Jones</u> Date: <u>19/7/16</u>
Coffey Environments Time: _____	Company: <u>Eurofins WA</u> Time: <u>3:20pm</u>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

508513

Received Melb DANIEL WRIGHT 508513
 200716 *[Signature]*

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event July
Project Name:	iL_Baseline GW_SW Monitorin Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
	SWL2-1	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL2-2	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL2-3	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	QC156	19/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC158	19/07/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC157	19/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments	Time:		Company:	Time:			

DANIEL WRIGHT
[Signature] 200716
 508513

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section										
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
1	QC144	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
2	QC145	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
3	QC146	13/07/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
4	QC148	13/07/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	

Environmental Division
 Perth
 Work Order Reference
EP1606351

Telephone : + 61-8-9209 7656

RELINQUISHED BY	RECEIVED BY
Name: Coffey Environments Date: Time:	Name: <u>J. Walker</u> Date: <u>17:40</u> Company: <u>ALS</u> Time: <u>13/7/16</u>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA	Task No: Monitoring Event August	Analysis Request Section											
Project Name: JL_Baseline GW_SW Monitorin	Laboratory: MGT	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name:	Project Manager: Richelle Bunbury												
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn													
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN													

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW50	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW51	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW52	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW53	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW54	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL20_1	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL20_2	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL20_3	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL21_1	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL21_2	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL21_3	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	QC161	15/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC160	15/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC159	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			

DANIEL WRIGHT
 # 511908 16082016

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 15.08.2016	Name: _____ Date: _____
Coffey Environments Time: _____	Company: _____ Time: _____

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

RECEIVED BY: Tom Kok - Environments
 DATE / TIME: 15/8/16 3:45 PM
 RELINQUISHED: 15/8/16 4:30 PM

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA	Task No: Monitoring Event August	Analysis Request Section																																													
Project Name: JL_Baseline GW_SW Monitorin Laboratory:	MGT	<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <td>Physical Parameters (pH, EC, TDS)</td> <td>Major Anions and Cations</td> <td>Total and dissolved metals</td> <td>Nitrogens - speciated</td> <td>Total Phosphorus</td> <td>Total reactive phosphorus</td> <td>B1</td> <td>OPP/OCp (trace)</td> <td>Alkalinity 4 - speciated</td> <td>Turbidity</td> <td>E.coli, thermotolerant bacter</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">NOTES</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES																																	
Physical Parameters (pH, EC, TDS)	Major Anions and Cations		Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES																																			
Sampler's Name: Harriet Carter	Project Manager: Richelle Bunbury	Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																																													
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L		Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																																													

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW36	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW37	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW38	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW39	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW40	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW42	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW43	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW44	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW48	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW49	15/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL17_1	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL17_2	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL17_3	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL19_1	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL19_2	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL19_3	15/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	QC162	15/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC163	15/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 17.08.2016 Coffey Environments Time:	Name: <u>Jonathan Mete</u> Date: <u>18/8</u> Company: <u>Eurofins</u> Time: <u>10am</u>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW45 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW46 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW47 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW33 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW34 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW35 ✓	18/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL15_1 -	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL15_2 -	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_1 ✓	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_2 ✓	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_3 ✓	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	-SWL15_1 - SWL18-1	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	-SWL15_2 - SWL18-2	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	SWL15_3 SWL18-3	18/08/2016	AM	Water	7 X p	5 days	X	X	X	X	X	X			X	X	X	
	-Tom Koc 18/8/16																	
	QC167 ✓	18/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC168 ✓	18/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY

RECEIVED BY

Name: H.CARTER Date: 18.08.2016 Name: [Signature] Date: 19/8
 Coffey Environments Time: Company: MGT Time: 8:20am

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

512409

RECEIVED BY: Tom Koc - Environments
 DATE/TIME: 18/8/16 2:45pm
 RELINQUISHED: 18/8/16 4:30pm

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August

Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT

Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	
	MW22	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW23	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW24	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW25	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW26	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW27	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW29	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW30	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW31	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW32	19/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	QC169	19/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC170	19/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY				RECEIVED BY			
Name: H.CARTER	Date: 19.08.2016	Name: Tom Kohn	Date: 19/8/16				
Coffey Environments	Time:	Company: Coffey Environments	Time: 3:20 PM				

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August
 Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW13	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW14	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW15	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW16	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW17	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW18	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW19	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW20	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW21	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	QC171	22/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	QC172	22/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC173	22/08/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 22/08/2016 Coffey Environments Time:	Name: BRETT MCGREGOR Date: 23/8/2016 Company: EUROPIKS MGT Time: 08:35 AM

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August							Analysis Request Section													
Project Name: JL_Baseline GW_SW Monitorin Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteri	NOTES		
Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury																				
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																				
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																				
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																				
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)														
	MW7	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	MW8	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	MW9	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	MW10	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	MW11	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	MW12	23/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X					
	SWL5_1	23/08/2016	AM	Water	7 6 x P	5 days	X	X	X	X	X	X			X	X	X			
	QC172 174	23/08/2016	AM	Water	1 x P	5 days			X										Dissolved metals Only	
	QC173 175	23/08/2016	AM	Water	1 x P	5 days			X										Dissolved metals Only	

RELINQUISHED BY			RECEIVED BY		
Name: H.CARTER	Date: 23/08/2016		Name: <i>[Signature]</i>	Date: 24/8	
Coffey Environments	Time:		Company: <i>[Signature] CE</i>	Time: 8:15am	

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August
 Project Name: \L_Baseline GW_SW Monitorin Laboratory: MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES						
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter							
	MW2	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X									
	MW3	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X									
	MW4	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X									
	MW5	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X									
	MW6	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X									
	SWL3_1	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X									
	SWL3_2	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL3_3	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL4_1	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL4_2	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X							
	SWL4_3	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X							
	LYTRA MWSS.																							

RELINQUISHED BY	RECEIVED BY	
Name: H.CARTER Date: 24/08/2016	Name: JIMMY Date: 28/8	513084 <input type="checkbox"/>
Coffey Environments Time:	Company: EFMBT Time: 12:25	

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

AU02_USR_LAB00020

From: Natalie Krasselt
Sent: Thursday, 25 August 2016 10:16 AM
To: AU02_USR_LAB00020
Subject: RE: Analysis for Northlink Monthly
Attachments: Chain of Custody Form_24.8.xlsx

Follow Up Flag: Follow up
Flag Status: Completed

COC attached Anthony

Natalie Krasselt
Phone : +61 3 8564 5051
Email : NatalieKrasselt@eurofins.com

From: AU02_USR_LAB00020
Sent: Thursday, 25 August 2016 8:14 AM
To: Harriet.Carter@coffey.com
Cc: Natalie Krasselt
Subject: Analysis for Northlink Monthly

Hi Harriet,

Please advise testing.

Anthony

Enviro Sample VIC

Eurofins | MGT
2-5 Kingston Town Close
OAKLEIGH VIC 3166
AUSTRALIA

Phone : +61 3 8564 5043
Fax : +61 3 8564 5090

Email : EnviroSampleVic@eurofins.com
Website : www.eurofins.com.au

PROJECT INFORMATION

Company: COFFEY

Contact person: HARRIET CARTER

Contact Number: 0417 096 638

Contact E-mail: HARRIET.CARTER@COFFEY.COM

Project Name/site: NORTHLINK MONTHLY

Project Number: _____

COC will be sent though

E-MAIL

or

FAX

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August

Project Name: 4L_Baseline GW_SW Monitorin Laboratory: MGT

Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW2	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW3	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW4	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW5	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	MW6	24/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X			
	SWL3_1	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X			
	SWL3_2	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3_3	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4_1	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4_2	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL4_3	24/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X	
	MW55	24/08/2016	AM	Water	6 x P, 2 x A, 1 x V	5 days	X	X	X	X	X	X	X		X			

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 24/08/2016 Coffey Environments Time:	Name: <i>JIMMY</i> Date: 25/8 Company: <i>EF/MGT</i> Time: 10:16AM

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

513084

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event August
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli; thermotolerant bacter					
	MW1	25/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	SWL1_1	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL1_2	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL1_3	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL2_1	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL2_2	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL2_3	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					
	QC176	24/08/2016	AM	Water	1 x P	5 days			X													Dissolved metals Only
	QC177	24/08/2016	AM	Water	1 x P	5 days			X													Dissolved metals Only
	QC178	25/08/2016	AM	Water	1 x P	5 days			X													Dissolved metals Only
	QC179	25/08/2016	AM	Water	1 x P	5 days			X													Dissolved metals Only
	QC180	25/08/2016	AM	Water	6 x P	5 days	X	X	X	X	X	X			X							
	QC181	25/08/2016	AM	Water	7 x P	5 days	X	X	X	X	X	X			X	X	X					

RELINQUISHED BY			RECEIVED BY		
Name: H.CARTER	Date: 25/08/2016	Coffey Environments	Name: Jonathan Mete	Date: 26/8	
	Time:		Company: Eurofins	Time: 10:45am.	<input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

coffey		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																			
Report Results to: Richelle Bunbury, Harriet Carter		Mobile: (08) 9269 6200	Email: Richelle.Bunbury@coffey.com																		
Invoices to: Accounts.Burb@coffey.com		Phone:	Email: Harriet.Carter@coffey.com																		
Project No: ENAUPERT04483AA	Task No: Monitoring Event 5	Analysis Request Section																			
Project Name: NL_Baseline GW_SW Monitoring Laboratory:		Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCF (trace) Alkalinity 4 - speciated Turbidity E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">NOTES</div>																		
Sampler's Name: Project Manager: Richelle Bunbury																					
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																					
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																					
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																					
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)															
	MW52	20/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X										
	MW48	20/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X										
	MW34	20/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X										
	QC183	20/09/2016	AM	Water	4 x P	5 days				X									Dissolved Metals Only		
	QC184	20/09/2016	AM	Water	4 x P	5 days				X									Dissolved Metals Only		
RELINQUISHED BY				RECEIVED BY																	
Name: _____ Date: _____				Name: <u>NATALIE ROGERS</u> Date: <u>20/09/2016</u>																	
Coffey Environments Time: _____				Company: <u>EUROFINS PER</u> Time: <u>2:46 pm</u>																	
Name: <u>N. ROGERS</u> Date: <u>20/09/16</u>				Name: _____ Date: _____																	
Company: <u>EUROFINS PER</u> Time: <u>17:00</u>				Company: _____ Time: _____																	

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 5
 Project Name: NL_Baseline GW_SW Monitoring Laboratory:
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter
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Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	* MW48	21/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			* MW44, NOT MW48
	/ MW21	21/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW25	21/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW16	21/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC185	21/09/2016	AM	Water	4 x P	5 days			X									Dissolved Metals Only
	QC186	21/09/2016	AM	Water	4 x P	5 days			X									Dissolved Metals Only

RELINQUISHED BY		RECEIVED BY	
Name: _____	Date: _____	Name: Tom Kok	Date: 21/9/16
Coffey Environments	Time: _____	Company: Eurofins Perth	Time: 3:00 pm
Name: Tom Kok	Date: 21/9/16	Name: _____	Date: _____
Company: Eurofins Perth	Time: 4:30pm	Company: _____	Time: _____

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 10					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Project Name: NL_Baseline GW_SW Monitoring Laboratory:		MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW10	22/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW3	22/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW 187 185	22/09/2016	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X		X				
	QC 187 187	22/09/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	QC 188 188	22/09/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	SWL3-1	22/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL3-2	22/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		
	SWL3-3	22/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X			X	X	X		

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name: Tom Kok	Date: 22/9/16	
Coffey Environments	Time:		Company: Eurofins Perth	Time: 3:20 pm	<input type="checkbox"/>
Name: Tom Kok	Date: 22/9/16	→	Name: Jonathan Mete	Date: 23/9	<input type="checkbox"/>
Company: Eurofins Perth	Time: 4:30pm		Company: Eurofins Melb	Time: 10:15am	<input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 10					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Project Name: NL_Baseline GW_SW Monitoring Laboratory:		MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW7 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW17 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW15 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW14 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW13 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW12 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW11 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	MW9 ✓	23/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X			X				
	QC189 ✓	23/09/2016	AM	Water	1 x P	5 days											Dissolved Metals Only	
	QC190 ✓	23/09/2016	AM	Water	1 x P	5 days											Dissolved Metals Only	

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name:	Date:	
Coffey Environments	Time:		NATALIE REEDS	23/09/16	<input type="checkbox"/>
			Company: COFFEE ENVIRONMENTS	Time: 3:40 PM	<input type="checkbox"/>
Name:	Date:	→	Name:	Date:	
	Time:		Liam	26/9/16	<input type="checkbox"/>
Company:			Company: CF/MEIT	Time: 8:17 am	<input type="checkbox"/>

517203

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Reference No. _____

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

**DOUBLE-SIDED
(PLEASE TURN OVER)**



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section											NOTES
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
X	X	X	X	X	X			X			
											Dissolved Metals Only
											Dissolved Metals Only
X	X	X	X	X	X			X	X	X	
X	X	X	X	X	X			X	X	X	

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)
	MW43 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW39 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW38 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW37 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW36 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW35 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW33 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW32 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW31 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW30 ✓	27/09/2016	AM	Water	4 x P	5 days
	MW29 ✓	27/09/2016	AM	Water	4 x P	5 days
	QC191 ✓	27/09/2016	AM	Water	4 x P	5 days
	QC192 ✓	27/09/2016	AM	Water	4 x P	5 days
	SWL15-1 ✓	27/09/2016	AM	Water	4 x P	5 days
	SWL15-2 ✓	27/09/2016	AM	Water	4 x P	5 days

RELINQUISHED BY		RECEIVED BY	
Name:	Date:	Name:	Date:
Coffey Environments		Tom Kok	27/9/16
Name: Tom Kok	Date: 27/9/16	Company: Eurofins Perth	Time: 3:15 pm
Company: Eurofins Perth	Time: 5:00 pm	Name: [Signature]	Date: 28/9/16
		Company: GF	Time: 8:20 am

517515

Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, - Ice, ST - Sodium Thiosulfate, NP - No Preservative

DOUBLE-CHECK
(PLEASE TURN OVER)

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Reference No. _____



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	SWL16-1 ✓	27/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-2 ✓	27/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-3 ✓	27/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	

COURIER

AS
 8.4

RELINQUISHED BY

RECEIVED BY

Name: _____ Date: _____ → Name: Tom Koh Date: 27/9/16
Coffey Environments Time: _____ Company: EUROFINS PERTH Time: 3:15 pm
Name: Tom Koh Date: 27/9/16 → Name: _____ Date: _____
Company: EUROFINS PERTH Time: 5:00 pm Company: _____ Time: _____

100

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

DOUBLE-SIDED.
(PLEASE TURN OVER)



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											NOTES
Project No:	Task No:	Project Name:	Project Manager:	Special Instructions:	Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L	Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW54 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW53 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW51 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW50 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW49 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW42 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW41 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW40 ✓	28/09/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL21-1 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL21-2 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL21-3 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC193 ✓	28/09/2016	AM	Water	4 x P	5 days			X								Dissolved Metals Only	
	QC194 ✓	28/09/2016	AM	Water	4 x P	5 days			X								Dissolved Metals Only	
	SWL20-1 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X *DID NOT RECEIVE. TK 28/9	
	SWL20-2 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20-3 ✓	28/09/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X *DID NOT RECEIVE. TK 28/9	

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name: Tom Kolk	Name:	Date: 28/9/16		
Coffey Environments	Time:		Company: EUROFINS PERTH	Company:	Time: 2:20pm.		
Name: Tom Kolk	Date: 28/9/16	→	Name: [Signature]	Name:	Date: 29/9/16		
Company: EUROFINS PERTH	Time: 5:00pm.		Company: EF	Company:	Time: 8:45am		

517711

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Tom Kok

To: Jowsey, Chris
Cc: Natalie Krasselt
Subject: Northlink samples not on CoC - Wednesday 28/9/16

Hi Chris, just letting you know in writing that samples **SWL19-1, SWL19-2, SWL19-3** are **to be added** to the CoC, for same testing as the other **SWL** samples, as per our phone call.

Kind Regards.

Tom Kok
Laboratory / ASM Assistant

Phone : +61 8 9251 9692
Email : TomKok@eurofins.com

From: Jowsey, Chris [<mailto:Chris.Jowsey@coffey.com>]
Sent: Wednesday, 28 September 2016 2:00 PM
To: Tom Kok
Subject: Esky Pick Up

Hi Tom,

Can I please get a esky pick up for Northlink. Is ready to go.

Please send email confirmation.

Cheers,

Chris Jowsey
Environmental Scientist

Suite 2, 53 Burswood Rd
BURSWOOD WA 6100

t: +61 8 9355 7100
m: +61 409 781 346



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Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

								Analysis Request Section										NOTES
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
	✓ MW47	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	✓ MW46	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	✓ MW45	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL18-1	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL18-2	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL18-3	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL4-1	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL4-2	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL4-3	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ SWL5-1	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ QC200	3/10/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	✓ QC201	3/10/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	✓ QC203	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ QC207	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY			RECEIVED BY		
Name: Coffey Environments	Date: _____	→	Name: Tom Kok	Date: 3/10/16	
	Time: _____		Company: Eurofins Perth	Time: 2:30 pm	
Name: Tom Kok	Date: 3/10/16	→	Name: Jonathan Mete	Date: 4/10	
Company: Eurofins Perth	Time: 5:00 am		Company: Eurofins Melbourne	Time: 9am	

518100

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



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 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event September
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
	✓ MW2	4/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	- MW4	4/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	✓ SWL1_1	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ SWL1_2	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ SWL1_3	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ SWL2_1	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	- SWL2_2	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ SWL2_3	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ QC209	4/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	✓ QC211	4/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	✓ QC212	4/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY	
Name: H.CARTER Date: 4/10/2016	Name: <i>[Signature]</i> Date: 5/10	<input type="checkbox"/>
Coffey Environments Time:	Company: <i>EF</i> Time: 3:15pm	<input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

518240



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 2

Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section										NOTES					
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity		E.coli, thermotolerant bacteria				
1	QC202	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
2	QC204	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X					
3	QC205	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
4	QC206	3/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
5	QC208	3/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X					

Environmental Division
 Perth
 Work Order Reference
EP1609263



Telephone : + 61-8-9209 7655

RELINQUISHED BY

RECEIVED BY

Name: Coffey Environments Date: _____ Time: _____
 Name: *Richelle* Date: *3/10/16*
 Company: *ALS* Time: *1400*

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event October		
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT		
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn				
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L					
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN					

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria					
✓	MW50	24/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
✓	MW52	24/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
✓	MW53	24/10/2016	AM				X	X	X	X	X	X			X							
✓	MW54	24/10/2016	AM				X	X	X	X	X	X			X							
	SWL20_1	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
	SWL20_2	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
	SWL20_3	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
✓	SWL21_1	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
r	SWL21_2	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
✓	SWL21_3	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
✓	QC214	24/10/2016	AM				X	X	X	X	X	X			X	X	X					
✓	QC216	24/10/2016	AM							X												Dissolved metals Only
✓	QC217	24/10/2016	AM							X												Dissolved metals Only

DEAR SAMPLE RECEIPT,
 - I'VE RECEIVED THE FOLLOWING SAMPLES:
 SWL19-1
 SWL19-2
 SWL19-3
 MW48
 MW49
 WHICH ARE NOT ON CoC.
 - DD NOT RECEIVE SWL20-1, SWL20-2, SWL20-3

RELINQUISHED BY				RECEIVED BY			
Name:	H.CARTER	Date:	24/10/2016	Name:	Jonathan	Date:	25/10
Company:	Coffey Environments	Time:		Company:	Ecofine	Time:	12pm

520951

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, NT - Sodium Thiosulfate, NP - No Preservative

AU02_USR_LAB00020

From: Natalie Krasselt
Sent: Tuesday, 25 October 2016 11:17 AM
To: AU02_USR_LAB00020
Subject: FW: missing and extra sample recieved for NL_Baseline GW_SW Monitoring project sampled 24/10/16

Please see testing for Coffey WA below

Natalie Krasselt
Phone : +61 3 8564 5051
Email : NatalieKrasselt@eurofins.com

From: Carter, Harriet [<mailto:Harriet.Carter@coffey.com>]
Sent: Tuesday, 25 October 2016 11:01 AM
To: Natalie Krasselt
Subject: RE: missing and extra sample recieved for NL_Baseline GW_SW Monitoring project sampled 24/10/16

Sorry Natalie.

Yes it was swl19 not 20 and the additional monitoring wells 48 and 49. Can they have the same analysis as the other surface water (turbidity and e coli) and monitoring wells (as per other mw samples?)

Sent from my Windows Phone

From: [Natalie Krasselt](#)
Sent: 25/10/2016 7:06 AM
To: [Carter, Harriet](#); [Bunbury, Richelle](#); [Jowsey, Chris](#)
Cc: [Steven Borg](#)
Subject: missing and extra sample recieved for NL_Baseline GW_SW Monitoring project sampled 24/10/16

Hi Harriet,

In regards to the NL_Baseline GW_SW Monitoring project (COC attached), we received 15 water samples. We did not receive SWL20_1, SWL20_2, SWL20_3, which are listed on the CoC, but we have received samples labelled SWL19_1, SWL19_2, SWL19_3, MW48, MW49 which are not on the CoC. Can you please clarify as soon as possible, if/what analysis you require on samples SWL19_1, SWL19_2, SWL19_3, MW48, MW49?

Kind regards,

Natalie Krasselt
Analytical Services Manager

Eurofins | mgt
2-5 Kingston Town Close
OAKLEIGH VIC 3166
AUSTRALIA
Phone : +61 3 8564 5051
Mobile : +61 421 233 772
Fax : +61 3 8564 5090

Email : NatalieKrasselt@eurofins.com
Website : www.eurofins.com.au/environmental-testing

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event October	Analysis Request Section			
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT	Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCp (trace) Alkalinity 4 -speciated Turbidity E.coli, thermotolerant bacter	NOTES		
Sampler's Name:	Harriet Carter	Project Manager: Richelle Bunbury					
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn						
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L							
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	
	MW45	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW46	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW47	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW51	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL18_1	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18_2	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18_3	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20_1	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20_2	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL20_3	25/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC218	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC219	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC220	25/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC221	25/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC222	25/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 25/10/2016	Name: Date: 26/10
Coffey Environments Time:	Company: EF Time: 2:17

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

521097

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event October
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW33	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW34	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW35	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW36	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW37	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW38	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW39	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW40	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW41	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW42	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW43	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW44	26/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL17_1	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17_2	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_1	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_2	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_3	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL15_1	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL15_2	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC223	26/10/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC225	26/10/2016	AM	Water	1 x P	5 days												Dissolved metals Only
	QC226	26/10/2016	AM	Water	1 x P	5 days												Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 26/10/2016 Coffey Environments Time:	Name: <i>[Signature]</i> Date: 25/10 Company: <i>[Signature]</i> Time: 11:01am

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

521286

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100													
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com												
		Invoices to: Accounts.Burb@coffey.com	Phone: _____ Email: Harriet.Carter@coffey.com												
Project No: ENAUPERT04483AA Task No: Monitoring Event 10		Analysis Request Section													
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: auto;">NOTES</div>		
Sampler's Name: _____ Project Manager: Richelle Bunbury															
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn															
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)									
	✓ MW1		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ MW5		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ MW6		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ MW7		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ MW8		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ MW9		AM	Water	4 x P	5 days	X	X	X	X	X				
	✓ SW4-1		AM	Water	5 x P	5 days	X	X	X	X	X	X	X		
	✓ SW4-2		AM	Water	5 x P	5 days	X	X	X	X	X	X	X		
	✓ SW4-3		AM	Water	5 x P	5 days	X	X	X	X	X	X	X		
	✓ QC227		AM	Water	4xP	5 days	X	X	X	X	X	X			
	✓ QC228		AM	Water	2xP	5 days			X					Dissolved Metals Only	
	✓ QC229		AM	Water	2xP	5 days			X					Dissolved Metals Only	
RELINQUISHED BY						RECEIVED BY									
Name: Lisa Wynne Date: 27/10/2016		Name: NATALIE ROGERS Date: 27/10/16		Name: _____ Date: _____		Name: _____ Date: 28/10/16		Name: _____ Date: _____		Name: _____ Date: _____		Name: _____ Date: _____		Name: _____ Date: _____	
Coffey Environments Time: 3pm		Company: Euforus P/R Time: 3:55 pm		Company: _____ Time: _____		Company: EF Time: 8:37		Company: _____ Time: _____		Company: _____ Time: _____		Company: _____ Time: _____		Company: _____ Time: _____	
*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative															

521478

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Reference No. 4483AA



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 11
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Harriet Carter, Lisa Wynne Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Project Information							Analysis Request Section										NOTES	
Lab No:	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity		E.coli, thermotolerant bacter
✓	MW31	28/10/2016	AM	Water		5 days	X	X	X	X	X	X			X			
✓	MW32	28/10/2016	AM	Water		5 days												
✓	MW27	28/10/2016	AM	Water		5 days												
✓	MW26	28/10/2016	AM	Water		5 days												
✓	MW24	28/10/2016	AM	Water		5 days												
✓	MW25	28/10/2016	AM	Water		5 days												
✓	MW23	28/10/2016	AM	Water		5 days												
✓	MW29	28/10/2016	AM	Water		5 days												
✓	MW30	28/10/2016	AM	Water		5 days												
✗	QC230	28/10/2016	AM	Water		5 days	X	X			X				X			Dissolved Metals Only
✗	QC231	28/10/2016	AM	Water		5 days			X									Dissolved Metals Only

RELINQUISHED BY				RECEIVED BY			
Name:	Lisa Wynne	Date:	28/10/2016	Name:	Tom Kelle	Date:	28/10/16
Company:	Coffey Environments	Time:	3pm	Company:	Eurofins Perth	Time:	3:10 pm
Name:		Date:	→	Name:	Jonathan	Date:	
Company:		Time:		Company:	Eurofins Melbourne	Time:	31/10/16 11:50am

521693

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*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event October			Analysis Request Section											
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT			Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury														
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																	

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW2	1/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW3	1/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW55	1/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X				
	SWL1_1	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL1_2	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL1_3	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL2_1	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL2_2	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL2_3	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL3_1	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL3_2	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	SWL3_3	1/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X		
	QC236	1/11/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC237	1/11/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 1/11/2016	Name: Jonathan Date: 2/11
Coffey Environments Time:	Company: Eurofins Melbourne Time: 12:00 PM

521966

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERTO4483AA	Task No:	Monitoring Event October		
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT		
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn				
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L					
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN					

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	
	MW4	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW10	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW11	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW12	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW13	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW14	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW15	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW16	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW17	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW18	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW19	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW20	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW21	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW22	31/10/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC233	31/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only
	QC234	31/10/2016	AM	Water	1 x P	5 days			X									Dissolved metals Only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 31/10/2016 Coffey Environments Time:	Name: <i>Tommy Wang</i> Date: <i>2/11/16</i> Company: <i>Envirofinal mgd</i> Time: <i>8:16am</i>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

522016



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA	Task No: Monitoring Event 12	Analysis Request Section											
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; width: 100px; margin: auto;">NOTES</div>
Sampler's Name: Project Manager: Richelle Bunbury													
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn													
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L													
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN													

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW1	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW2	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW3	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW4	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW5	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			* MISLABELLED AS MW5 S?
	MW6	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL1-1	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	SWL1-2	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X			
	SWL1-3	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2-1	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2-2	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2-3	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-1	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-2	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3-3	22/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	MW55	22/11/2016	AM	Water	4 x P, 2 x V, 1 x A	5 days	X	X	X	X	X	X	X		X			

RELINQUISHED BY		RECEIVED BY	
Name: _____	Date: _____	Name: <u>Yuriko Sunazuka</u>	Date: <u>22/11/16</u>
Company: <u>Coffey Environments</u>	Time: _____	Company: <u>Eurofins Perth</u>	Time: <u>15:06</u>
Name: <u>Yuriko Sunazuka</u>	Date: <u>22/11/16</u>	Name: <u>DANIEL WELLS</u>	Date: <u>23/11/2016</u>
Company: <u>Eurofins Perth</u>	Time: <u>17:00</u>	Company: <u>BP MGT</u>	Time: <u>#524710</u>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section												NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter		
	✓ SWL4-1	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X		
	✓ SWL4-2	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X		
	✓ SWL4-3	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X		
	✓ QC238	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X		
	✓ QC240	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X		
	✓ QC242	22/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	✓ QC243	22/11/2016	AM	Water	4 x P	5 days												Dissolved Metals Only	
	✓ QC244	22/11/2016	AM	Water	4 x P	5 days												Dissolved Metals Only	
	5.91																		

COURT

22 NOV '16 15:06
 25.9
 22.1
 + 24.7
 + 0.4

RELINQUISHED BY		RECEIVED BY	
Name: Coffey Environments	Date: _____	Name: DANIEL WRIGHT	Date: 23/11/2016
	Time: _____	Company: EFMC	Time: 3:29:10
Name: _____	Date: _____	Name: _____	Date: _____
Company: _____	Time: _____	Company: _____	Time: _____

18.0

* Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

524859.

Reference No. _____

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 12
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: _____ Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

							Analysis Request Section										NOTES
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 -speciated	Turbidity	
	✓ MW54	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW53	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW52	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW51	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW50	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW47	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
	✓ MW46	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X		
	✓ MW45	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X		
	✓ SWL20-1	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X
	✓ SWL20-2	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X
	✓ SWL20-3	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X
	✓ SWL21-1	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X
	✓ SWL21-2	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X
	✓ SWL21-3	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X

RELINQUISHED BY
 Name: _____ Date: _____
 Coffey Environments Time: _____

RECEIVED BY
 Name: Tom Kok Date: 23/11/16
 Company: Eurofins Perth Time: 3:20 pm.
 Name: Jonathan Date: 24/11
 Company: Eurofins Melbourne Time: 10am.

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section											
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES	
	✓ QC248	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X							
	✓ QC249	23/11/2016	AM	Water	4 x P	5 days			X										Dissolved Metals Only
	✓ QC250	23/11/2016	AM	Water	4 x P	5 days			X										Dissolved Metals Only

23 NOV '16 15:24

19.7
 19.2
 25.6

 21.5

COURIER

AS

24 NOV '16 08:33

+ 0.4

 21.9

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments	Time:		Company:	Time:			
Name:	Date:	→	Name:	Date:			
Company:	Time:		Company:	Time:			

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 12
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW39 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW38 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW37 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW36 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW35 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW34 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW33 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW32 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW31 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW30 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW29 ✓	24/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL15-1 ✓	24/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL15-2 ✓	24/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-1 ✓	24/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-2 ✓	24/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-3 ✓	24/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ →	Name: <u>Tom Kolk</u> Date: <u>24/11/16</u>
Coffey Environments Time: _____	Company: <u>Ewofins</u> Time: <u>2:45 pm</u>
Name: <u>Yukihiro Sinazuka</u> Date: <u>24/11/16</u> →	Name: <u>Liam</u> Date: <u>25/11/16</u>
Company: <u>Ewofins Perth</u> Time: <u>17:00</u>	Company: <u>ef/merit</u> Time: <u>8:39am</u>

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

525126

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 10
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	QC251 ✓	24/11/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
	QC252 ✓	24/11/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only
				12.9 -0.1 <u>12.8</u>	DW 12L													24 NOV '16 15:33
				19.9 25.7 22.6 21.1 <u>22.2</u> 20.4														

COURIER

RELINQUISHED BY		RECEIVED BY	
Name:	Date: →	Name:	Date:
Coffey Environments	Time:	Company:	Time:
Name:	Date: →	Name:	Date: 25/11/16
Company:	Time:	Company:	Time:

525120

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

	Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100					
	Report Results to:	Richelle Bunbury, Harriet Carter	Mobile:	(08) 9269 6200	Email:	Richelle.Bunbury@coffey.com
	Invoices to:	Accounts.Burb@coffey.com	Phone:		Email:	Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 12	Analysis Request Section			
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT			Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCP (trace) Alkalinity 4 - speciated Turbidity E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">NOTES</div>		
Sampler's Name:	Project Manager: Richelle Bunbury						
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn						
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN							


Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
	/ MW27	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW26	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW25	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW24	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW23	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW7	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW8	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW9	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW10	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW11	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW12	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW14	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ MW15	25/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	/ QC253	25/11/2016	AM	Water	1 x P	5 days												Dissolved Metals Only
	/ QC254	25/11/2016	AM	Water	1 x P	5 days												Dissolved Metals Only

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments			YUKIKO SUNAZUKA	25/11/16			<input type="checkbox"/>
	Time:		Company: Eurofins Perth	15:23			<input type="checkbox"/>
Name: YUKIKO S	Date: 25/11/16	→	Name: JIMMY NEAR	Date: 28/11/16			<input type="checkbox"/>
Company: Eurofins Perth	Time: 17:00		Company: Eurofins MELB	Time: 8:13AM			

525325

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																			
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200	Email: Richelle.Bunbury@coffey.com																	
		Invoices to: Accounts.Burb@coffey.com	Phone:	Email: Harriet.Carter@coffey.com																	
Project No: ENAUPERT04483AA Task No: Monitoring Event 12		Analysis Request Section																			
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCP (trace) Alkalinity 4 - speciated Turbidity E.coli, thermotolerant bacter	NOTES																		
Sampler's Name: Project Manager: Richelle Bunbury																					
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																					
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																					
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																					
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES			
	✓ MW14	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW16	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW17	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW18	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW19	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW20	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW21	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW22	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW48	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ MW49	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ SWL19-1	28/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X				
	✓ SWL19-2	28/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X				
	✓ SWL19-3	28/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X				
	✓ SWL5-1	28/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X				
	✓ QC257	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X						
	✓ QC255	28/11/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only			
	✓ QC256	28/11/2016	AM	Water	1 x P	5 days			X									Dissolved Metals Only			
RELINQUISHED BY						RECEIVED BY															
Name:		Date:		→		Name: YUKIKO SUMAZUKA		Date: 28/11/16													
Coffey Environments		Time:				Company: Enohins Resh		Time: 15:27													
Name: Yukiko.S		Date: 28/11/16		→		Name: JIMMY NEAR		Date: 29/11/16													
Company: Enohins Resh		Time: 17:00				Company: ENOHINS RESH		Time: 11:36													
*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative																					

525466

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 12
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria					
	MW44	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
	MW43	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
	MW42	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
	MW41	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
	MW40	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X							
	SWL17-1	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL17-2	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X					
	SWL17-3	28/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X					
	QC259	28/11/2016	AM	Water	4 x P	5 days				X												Dissolved Metals Only
	QC260	28/11/2016	AM	Water	4 x P	5 days				X												Dissolved Metals Only

RELINQUISHED BY		RECEIVED BY	
Name:	Date:	Name:	Date:
Coffey Environments		Yuriko S	29/11/16
	Time:	Company: Evofms Pean	Time: 14:00
Name: Yuriko S	Date: 29/11/16	Name: [Signature]	Date: 30/11
Company: Evofms Pean	Time: 17:00	Company: EF	Time: 8:26am

525644

* Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office:	Suite 2, 53 Burswood Road, Burswood, WA, 6100		
Report Results to:	Richelle Bunbury, Harriet Carter	Mobile:	(08) 9269 6200
Invoices to:	Accounts.Burb@coffey.com	Email:	Richelle.Bunbury@coffey.com
		Phone:	
		Email:	Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13

Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>
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Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
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1	QC262	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X	
2	QC263	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
3	QC264	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
4	QC265	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
		14.12.16														

Environmental Division
Perth
Work Order Reference
EP1612105



Telephone : - 61-8-9209 7655

RELINQUISHED BY	RECEIVED BY
------------------------	--------------------

Name: Coffey Environments	Date: _____	→	Name: SP	Date: 14.12.16	
	Time: _____		Company: ALS	Time: 1615	<input type="checkbox"/> <input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Reporting Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: _____ Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCp (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter					
✓	MW1	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW2	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW3	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW4	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW5	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW6	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW7	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW8	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW10	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	QC260	13/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	QC259	13/12/2016	AM	Water	1 x P ✓	5 days																Dissolved Metals Only
✓	QC258	13/12/2016	AM	Water	1 x P ✓	5 days				X												Dissolved Metals Only
✓	SWL1-1	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					
✓	SWL1-2	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					
✓	SWL1-3	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					
✓	MW55	13/12/2016	AM	Water	4 x P, 1 x A, 2 x V ✓	5 days	X	X	X	X	X	X	X		X							

RELINQUISHED BY			RECEIVED BY		
Name: _____	Date: _____	→	Name: <u>DAMIAN WRIGHT</u>	Date: <u>14.12.2016</u>	
Coffey Environments	Time: _____		Company: <u>EUROFINS MWJ</u>	Time: <u>#527744</u>	
Name: _____	Date: _____	→	Name: _____	Date: _____	
Company: _____	Time: _____		Company: _____	Time: _____	

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											NOTES
Project No:	Task No:	Monitoring Event 13					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	
ENAUPERT04483AA		MGT																
Project Name: NL_Baseline GW_SW Monitoring Laboratory:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	SWL2-1 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL2-2 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL2-3 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL3-1 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL3-2 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL3-3 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL4-1 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL4-2 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL4-3 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
	SWL5-1 ✓	13/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name: DANIEL WILSON	Date: 14/12/16	19.5°C 16.9°C 14.7°C +0.4
Coffey Environments	Time:		Company: EUROFINS MGT	Time: #527744	
Name:	Date:	→	Name:	Date:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Company:	Time:		Company:	Time:	

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

13DEC16 14:32 CH

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: _____ Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW54 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW53 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW52 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW51 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW50 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW49 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW48 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW47 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW46 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	MW45 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	QC266 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			
	QC267 ✓	14/12/2016	AM	Water	1 x P ✓	5 days			X									Dissolved Metals Only
	SWL20-1 ✓	14/12/2016	AM	Water	1 x P ✓	5 days			X									Dissolved Metals Only
	SWL20-2 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL20-3 ✓	14/12/2016	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY		RECEIVED BY	
Name: Coffey Environments	Date: _____	Name: <i>DAMEL WRIWEN BUNBURY</i>	Date: <i>15/12/2016</i>
	Time: _____	Company: <i>EPRICT</i>	Time: <i>#527923</i>
Name: _____	Date: _____	Name: _____	Date: _____
Company: _____	Time: _____	Company: _____	Time: _____

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13

Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	SWL19-1 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-2 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL19-3 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-1 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-2 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	SWL18-3 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	QC261 ✓	14/12/2016	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X	
	QC268 ✓	14/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X			

RELINQUISHED BY

RECEIVED BY

Name: Coffey Environments	Date: _____	→	Name: <u>CASSIE HASAN</u>	Date: <u>14-12-16</u>
	Time: _____		Company: <u>Eurofins</u>	Time: <u>16.15</u>
Name: <u>CASSIE HASAN</u>	Date: <u>14-12-16</u>	→	Name: <u>DAMIAN WILLIAMS</u>	Date: <u>15/12/16</u>
Company: <u>Eurofins</u>	Time: <u>5pm</u>		Company: <u>EF MGT</u>	Time: <u>#527923</u>

21.1 °C
 23.7
 22.6
 +0.4
 22.8 °C

14 DEC '16 16 15

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																	
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com																
		Invoices to: Accounts.Burb@coffey.com	Phone: _____ Email: Harriet.Carter@coffey.com																
Project No: ENAUPERT04483AA Task No: Monitoring Event 13		Analysis Request Section																	
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCF (trace) Alkalinity 4 - speciated Turbidity E. coli, thermotolerant bacteria	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">NOTES</div>																
Sampler's Name: _____ Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E. coli, thermotolerant bacteria		
	MW33 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW34 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW35 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW36 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW37 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW38 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW39 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW40 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	MW41 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X				
	QC269 ✓	15/12/2016	AM	Water	1 x P ✓	5 days													Dissolved Metals Only
	QC270 ✓	15/12/2016	AM	Water	1 x P ✓	5 days													Dissolved Metals Only
RELINQUISHED BY						RECEIVED BY													
Name: _____ Date: _____ →						Name: <u>CASSIE HASAN</u> Date: _____						Company: <u>[Signature]</u> Time: _____							
Name: <u>CASSIE HASAN</u> Date: <u>15/12/16</u> Spm →						Name: <u>JIMMY NAPIER</u> Date: <u>19/12</u>						Company: <u>EUROFINS LAB</u> Time: <u>8:40</u>							
Company: <u>EUROFINS</u> Time: _____																			
27.4 <input type="checkbox"/> 23.5 <input type="checkbox"/> 22.8 <input type="checkbox"/>																			
15 DEC '16 14:03 <div style="border: 1px solid black; padding: 2px; display: inline-block;">528455</div>																			
*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative																			

	Consigning Office:	Suite 2, 53 Burswood Road, Burswood, WA, 6100		
	Report Results to:	Richelle Bunbury, Harriet Carter	Mobile:	(08) 9269 6200
	Invoices to:	Accounts.Burb@coffey.com	Phone:	
		Email:	Richelle.Bunbury@coffey.com	
		Email:	Harriet.Carter@coffey.com	

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 13				Analysis Request Section									
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT				Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name:	Project Manager: Richelle Bunbury															
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn															
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)										
	MW33 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW34 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW35 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW36 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW37 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW38 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW39 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW40 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	MW41 ✓	15/12/2016	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X				
	QC269 ✓	15/12/2016	AM	Water	1 x P ✓	5 days										Dissolved Metals Only
	QC270 ✓	15/12/2016	AM	Water	1 x P ✓	5 days										Dissolved Metals Only

RELINQUISHED BY		RECEIVED BY	
Name:	Date:	Name: <u>CASSIE HASAN</u>	Date:
Coffey Environments	Time:	Company: <u>[Signature]</u>	Time:
Name: <u>CASSIE HASAN</u>	Date: <u>16/12/16</u> Spm →	Name:	Date:
Company: <u>EUROFINS</u> [Signature]	Time:	Company:	Time:

27.4
23.5
22.8

15 DEC '16 14:05

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13							Analysis Request Section											
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW9 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW11 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW12 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW13 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW14 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW15 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW17 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW23 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW24 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW25 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW26 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW27 ✓	16/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC271 ✓	16/12/2016	AM	Water	1 x P	5 days				X								Dissolved Metals Only
	QC272 ✓	16/12/2016	AM	Water	1 x P	5 days				X								Dissolved Metals Only

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:	→		
Coffey Environments	Time:		Ben	16/12/16			
			Company: Eurofine	Time: 1400			
Name: Ben	Date: 16/12/16	→	Name: Jimmy	Date: 16/12			
Company: Eurofine	Time: 1700		Company: EPIMGT	Time: 1430			

528499

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											NOTES
Project No:	Task No:	Project Name:					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
ENAUPERT04483AA	Monitoring Event 13	NL_Baseline GW_SW Monitoring Laboratory: MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																		
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW44	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW43	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW42	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW32	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW31	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW30	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW29	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW22	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW21	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW20	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW19	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW18	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW16	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC273	19/12/2016	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC274	19/12/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	
	QC275	19/12/2016	AM	Water	1 x P	5 days			X								Dissolved Metals Only	

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name: <i>R. ...</i>	Date: <i>19/12/16</i>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Coffey Environments	Time:		Company: <i>...</i>	Time: <i>4:15pm</i>	
Name:	Date:	→	Name: <i>Tom Young</i>	Date: <i>20/12/16</i>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Company:	Time:		Company: <i>...</i>	Time: <i>8:00 am</i>	

528701

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office:	Suite 2, 53 Burswood Road, Burswood, WA, 6100		
Report Results to:	Richelle Bunbury, Harriet Carter	Mobile:	(08) 9269 6200
Invoices to:	Accounts.Burb@coffey.com	Email:	Richelle.Bunbury@coffey.com
		Phone:	
		Email:	Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 13

Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>
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Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
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1	QC262	23/11/2016	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X	
2	QC263	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
3	QC264	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
4	QC265	23/11/2016	AM	Water	4 x P	5 days	X	X	X	X	X		X			
		14.12.16														

Environmental Division
Perth
Work Order Reference
EP1612105



Telephone : - 61-8-9209 7655

RELINQUISHED BY	RECEIVED BY
------------------------	--------------------

Name: Coffey Environments	Date: _____	→	Name: SP	Date: 14.12.16	
	Time: _____		Company: ALS	Time: 1615	<input type="checkbox"/> <input type="checkbox"/>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 14
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES				
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter					
✓	MW1	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW2	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW3	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW4	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW5	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW6	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW7	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW8	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	MW55	17/01/2017	AM	Water	4 x P, 2 x V, 1 x A ✓	5 days	X	X	X	X	X	X	X		X							
✓	QC278	17/01/2017	AM	Water	4 x P ✓	5 days	X	X	X	X	X	X			X							
✓	QC276	17/01/2017	AM	Water	1 x P ✓	5 days				X												Dissolved Metals Only
✓	QC277	17/01/2017	AM	Water	1 x P ✓	5 days				X												Dissolved Metals Only
✓	SWL1-1	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					
✓	SWL1-2	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					
✓	SWL1-3	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X	X			X	X	X					

RELINQUISHED BY	RECEIVED BY
Name: _____ Date: _____ → Coffey Environments Time: _____	Name: <u>CASSIE HASAN</u> _____ Date: _____ Company: _____ Time: _____
Name: <u>CASSIE HASAN</u> _____ Date: <u>spm 17-1-17</u> → Company: _____ Time: _____	Name: _____ Date: <u>17/1/17</u> Company: <u>EF</u> Time: <u>2:13pm</u>

530725

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 14					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT																		
Sampler's Name: Project Manager: Richelle Bunbury																		
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
✓	SWL2-1	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL2-2	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL2-3	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL3-1	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL3-2	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL3-3	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL4-1	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL4-2	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		
✓	SWL4-3	17/01/2017	AM	Water	5 x P ✓	5 days	X	X	X	X	X			X	X	X		

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	➔	Name:	Date:	
Coffey Environments	Time:		Company:	Time:	
Name:	Date:	➔	Name:	Date:	
Company:	Time:		Company:	Time:	

17 JAN '17 14:13
 20.6
 22.0
 25.1



*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											NOTES
Project No:	Task No:	Project Name:	Project Manager:	Special Instructions:	Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L	Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
✓	MW54	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW53	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW52	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW51	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW50	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW49	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW48	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW47	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW46	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	QC279	18/01/2017	AM	Water	1 x P	5 days											Dissolved Metals Only	
✓	QC280	18/01/2017	AM	Water	1 x P	5 days												Dissolved Metals Only
✓	SWL20-1	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL20-2	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL20-3	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name:	Date:	
Coffey Environments	Time:		Company:	Time:	
Name:	Date:	→	Name:	Date:	
Company:	Time:		Company:	Time:	

530890

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 14

Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT

Sampler's Name: Project Manager: Richelle Bunbury

Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
✓	SWL19-1	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL19-2	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL19-3	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL18-1	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL18-2	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL18-3	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	QC289	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	QC284	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	QC281	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

R- Iceblacks
 18 JAN '17 14:44
 27.2
 17.8
 27.0
 10.4

RELINQUISHED BY		RECEIVED BY	
Name: Coffey Environments	Date: _____	Name: <u>CASSIE HASAN</u>	Date: <u>18-1-17</u>
	Time: _____	Company: _____	Time: _____
Name: <u>CASSIE HASAN</u>	Date: <u>18-1-17</u>	Name: _____	Date: _____
Company: _____	Time: _____	Company: _____	Time: _____

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 14
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

							Analysis Request Section										NOTES
Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	
✓	MW45	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW44	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW43	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW42	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW41	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW40	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW39	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW38	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW37	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW36	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	MW34	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	QC288	19/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X		
✓	QC291	19/01/2017	AM	Water	1 x P	5 days											Dissolved Metals Only
✓	QC292	19/01/2017	AM	Water	1 x P	5 days											Dissolved Metals Only

RELINQUISHED BY

Name: _____ Date: _____ →

Coffey Environments Time: _____

Name: CASSIE HASAN Date: 19-1-17 →

Company: _____ Time: 17:00 PM

RECEIVED BY

Name: CASSIE HASAN Date: 14:29 PM 19-1-17

Company: _____ Time: _____

Name: _____ Date: 19/1 2:29pm

Company: _____ Time: _____

ICE CH 19 JAN '17 14:29
 22.8
 22.4
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 10.4
 23.0°C

53196

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 14
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section																			
Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES								
✓	SWL22-1	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
✓	SWL22-2	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL22-3	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL17-1	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL17-2	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL17-3	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL16-1	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL16-2	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				
✓	SWL16-3	19/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X		X	X	X				

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	➔	Name:	Date:			
Coffey Environments	Time:		Company:	Time:	<input type="checkbox"/>		
Name:	Date:	➔	Name:	Date:	<input type="checkbox"/>		
Company:	Time:		Company:	Time:	<input type="checkbox"/>		

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST




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 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											
Project No: ENAUPERT04483AA		Task No: Monitoring Event 14					Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Project Name: NL_Baseline GW_SW Monitoring Laboratory:		MGT																
Sampler's Name:		Project Manager: Richelle Bunbury																
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																		
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW27 ✓	20/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW26 ✓	20/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW25 ✓	20/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW24 ✓	20/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW23 ✓	20/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC 293 293 ✓	20/01/2017	AM	Water	1 x P	5 days											Dissolved Metals Only	
	QC 294 294 ✓	20/01/2017	AM	Water	1 x P	5 days											Dissolved Metals Only	

RELINQUISHED BY			RECEIVED BY		
Name: _____	Date: _____	→	Name: <i>Ben</i>	Date: <i>20/1/17</i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Coffey Environments	Time: _____		Company: <i>Eurofins</i>	Time: <i>1445</i>	
Name: <i>Ben</i>	Date: <i>20/1/17</i>	→	Name: <i>Liam</i>	Date: <i>23/1/17</i>	<div style="border: 1px solid black; padding: 5px; display: inline-block;">531351</div>
Company: <i>Eurofins</i>	Time: <i>1700</i>		Company: <i>CF/ment</i>	Time: <i>2:42 pm</i>	

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																	
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com																
		Invoices to: Accounts.Burb@coffey.com	Phone: Email: Harriet.Carter@coffey.com																
Project No: ENAUPERT04483AA Task No: Monitoring Event 14		Analysis Request Section																	
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES						
Sampler's Name: Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	MW35 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW33 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW32 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW31 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW30 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW29 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW22 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW21 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW20 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW19 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW18 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW17 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	MW16 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X				X			
	QC296 ✓	23/01/2017	AM	Water	1 x P	5 days				X									Dissolved Metals Only
	QC295 ✓	23/01/2017	AM	Water	1 x P	5 days				X									Dissolved Metals Only
	QC297 ✓	23/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X			X			
RELINQUISHED BY						RECEIVED BY													
Name: Coffey Environments		Date: _____		Time: _____		Name: Ben Clojess		Date: 23/1/17		Time: 1500									
Name: Ben		Date: 23/1/17		Time: 1700		Name: Liam		Date: 24/1/17		Time: 8:00am									
Company: Envojin						Company: EF/met													
*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative												531518							

AU02_USR_LAB00020

From: Carter, Harriet <Harriet.Carter@coffey.com>
Sent: Tuesday, 24 January 2017 4:40 PM
To: Enviro Sample Vic
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 531518 : Site NL_BASELINE GW_SW MONITORING LABORATORY (ENAUPERT04483AA MONITORING EVENT 14)

Hi,

There should not have been any ambers or vials in this esky so please disregard all vials and ambers and place off hold.

Thanks

Kind regards,

Harriet Carter
Environmental Scientist

t: +61 8 9269 6200
f: +61 8 9269 6299
m: +61 417 096 638
w: coffey.com

>>> Ingenuity@coffey – it's the ideas that count

From: envirosamplevic@eurofins.com [<mailto:envirosamplevic@eurofins.com>]
Sent: Tuesday, 24 January 2017 10:57 AM
To: Bunbury, Richelle <Richelle.Bunbury@coffey.com>
Cc: Carter, Harriet <Harriet.Carter@coffey.com>
Subject: Eurofins | mgt Sample Receipt Advice - Report 531518 : Site NL_BASELINE GW_SW MONITORING LABORATORY (ENAUPERT04483AA MONITORING EVENT 14)

Dear Valued Client,

UNABLE TO COMPLETE B1 ON QC297 AS NO AMBER OR VIALS RECEIVED. 4 UNLABELLED TRIP BLANK VIALS RECEIVED AND PLACED ON HOLD

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed. Any samples that are received in our lab that have not been scheduled for testing will be charged a fee per sample to cover the supply of the container, handling, storage and disposal as detailed below.

HOLDING FEES

Samples received by Eurofins | mgt and not requested for analysis and require "Hold" will be charged to the client at a cost of \$2.00 per sample.

Hold samples will be stored for a period of 3 months for soils and 3 weeks for water samples. This storage cost will be reimbursed to the Client if analysis is subsequently requested on the sample within 3 months for soils and 3 weeks for water samples.

Regards

Liam Prescott
Sample Receipt

Eurofins | mgt
2-5 Kingston Town Close
OAKLEIGH VIC 3166
AUSTRALIA
Phone: +61 385 645 000
Email: envirosamplevic@eurofins.com
Website: environment.eurofins.com.au
[EnviroNote 1068 - Eurofins Perth Laboratory](#)
[EnviroNote 1069 - Eurofins Overnight TAT](#)

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 14							Analysis Request Section																
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES					
Sampler's Name: Project Manager: Richelle Bunbury																							
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																							
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																							
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																							
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)																	
	MW16 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW15 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW14 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW13 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW12 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW11 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW10 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	MW9 ✓	24/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X								
	SWL5-1 ✓	24/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X						
	QC298 ✓	24/01/2017	AM	Water	1 x P	5 days																Dissolved Metals Only	
	QC299 ✓	24/01/2017	AM	Water	1 x P	5 days																	Dissolved Metals Only

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name: Ben Clolessy	Date: 24/1/17			
Company: Coffey Environments	Time:		Company: Eurofins	Time: 1530			<input type="checkbox"/>
Name: Ben Clolessy	Date: 24/1/17	→	Name: [Signature]	Date: 24/1/17			<input type="checkbox"/>
Company: Eurofins	Time: 1700		Company: [Signature]	Time: 1:40p			<input type="checkbox"/>

531625

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



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 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 14
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
1	QC290	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
2	QC287	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
3	QC286	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	x	x	
4	QC285	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
5	QC283	18/01/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
6	QC282	18/01/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	x	x	

Environmental Division
Perth
 Work Order Reference
EP1700437

Telephone + 61-8-9209 7655

RELINQUISHED BY		RECEIVED BY	
Name: _____	Name: <i>SP</i>	Date: _____	Date: <i>18.01.17</i>
Coffey Environments	Company: <i>ALS</i>	Time: _____	Time: <i>1600</i>

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 15	Analysis Request Section											
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury												
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW1 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW2 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW3 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW4 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW5 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW6 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW7 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW8 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW9 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW10 ✓	15/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW55 ✓	15/02/2017	AM	Water	2XV 1XA 4XP	5 days	X	X	X	X	X	X	X		X			
	SWL1_1 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1_2 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL1_3 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2_1 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2_2 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL2_3 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3_1 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3_2 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL3_3 ✓	15/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY				RECEIVED BY			
Name:	H.CARTER	Date:	15/02/2017	Name:	Ben Clobery	Date:	15/2/17
Coffey Environments		Time:		Company:	Envirofins	Time:	1523

CASSIE HASAN
15/2/17 3:23 PM

534351

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 15
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES	
							Physical Parameters (pH, EC, TOC)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter			
-	MW34 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW36 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW37 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW38 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW39 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW45 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW46 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	MW47 ✓	16/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X	X			
-	SWL16_1 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL16_2 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL16_3 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL15_1 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL15_2 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL18_1 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL18_2 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL18_3 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL22_1 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL22_2 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	SWL22_3 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	QC307 ✓	16/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X	X	X	X	
-	QC312 ✓	16/02/2017	AM	Water	1 x P	5 days			X										DISSOLVED ONLY
-	QC313 ✓	16/02/2017	AM	Water	1 x P	5 days			X										DISSOLVED ONLY

RELINQUISHED BY			RECEIVED BY		
Name: H.CARTER	Date: 16/02/2017		Name: <i>Ben Chelley</i>	Date: 16/2/17	
Coffey Environments	Time:		Company: <i>EnviroLink</i>	Time: 1525	

534540



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 15
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW33 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW35 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW43 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW44 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW29 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW30 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW22 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW23 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW24 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW25 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW26 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW27 ✓	17/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	QC314 ✓	17/02/2017	AM	Water	1 x P	5 days			X								DISSOLVED ONLY
	QC315 ✓	17/02/2017	AM	Water	1 x P	5 days			X								DISSOLVED ONLY

RELINQUISHED BY

RECEIVED BY

Name: H.CARTER Date: 17/02/2017
 Coffey Environments Time:

Name: Ben Chilesy Date: 17/2/17
 Company: Coffey Time: 1530

Liam CF/mest 20/2/17
 8:00am
 534765

* Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section										NOTES
Project No:	Task No:	Project Name:	LAB	MGT	Sampler's Name:	Project Manager:	Physical Parameters (pH, EC, Turbidity)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	OPP/OCP (trace)	Alkalinity 4 - speciated	E.coli, thermotolerant bacteria		
ENAUPERT04483AA	Monitoring Event 15	NL_Baseline GW_SW Monitoring			Harriet Carter	Richelle Bunbury											
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																	
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																	
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, Turbidity)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	OPP/OCP (trace)	Alkalinity 4 - speciated	E.coli, thermotolerant bacteria		
	MW50	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW51	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW52	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW53	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW54	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW11	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW12	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW13	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW14	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW15	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW16	20/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	SWL19_1	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL19_2	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL19_3	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL20_1	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL20_2	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL20_3	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL21_1	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL21_2	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	SWL21_3	20/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X		
	QC316	20/02/2017	AM	Water	1 x P	5 days			X						DISSOLVED ONLY		
	QC317	20/02/2017	AM	Water	1 x P	5 days			X						DISSOLVED ONLY		

RELINQUISHED BY			RECEIVED BY		
Name:	H.CARTER	Date:	20/02/2017	Name:	Tom Wong
Coffey Environments		Time:		Company:	Choojinsing
				Date:	20/2/17
				Time:	4:21

534877

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: _____ Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 15
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L

Analysis Request Section

Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section										NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	
	MW54	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW40	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW41	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW42	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW48	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW49	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW32	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW31	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW17	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW18	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW19	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X			
	MW20	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X	X	X	
	MW21	21/02/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL17-1	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL19-1	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL19-3	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL20-1	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL20-2	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	SWL20-3	21/02/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X		X	X	X	
	QC321	21/02/2017	AM	Water	4xP	5 days	X	X	X	X	X	X		X			
	QC322	21/02/2017	AM	Water	1 x P	5 days				X							DISSOLVED ONLY
	QC323	21/02/2017	AM	Water	1 x P	5 days				X							DISSOLVED ONLY

RELINQUISHED BY
 Name: L. Wynne Date: 21/02/2017
 Coffey Environments Time: _____

RECEIVED BY
 Name: Yuriko S. Date: 21/2/17
 Company: Eurofins Perth Time: 16:30

Relinquished by:
 YS Eurofins Perth 21/2/17 17:00
535050

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Enviro Sample WA

From: Carter, Harriet <Harriet.Carter@coffey.com>
Sent: Monday, 13 March 2017 1:53 PM
To: Enviro Sample WA
Subject: RE: Esky pickup
Attachments: Chain of Custody Form_13.03.2017.xlsx

Hi Cassie,

Please find attached COC for today- also can you please update the two metals bottles labelled QCA and QCB to QC324 and QC325 in the esky?

Thanks
Harriet.

Kind regards,

Harriet Carter
Environmental Scientist

t: +61 8 9269 6200
f: +61 8 9269 6299
m: +61 417 096 638
w: coffey.com

>>> Ingenuity@coffey – it's the ideas that count

From: EnviroSampleWA@eurofins.com [<mailto:EnviroSampleWA@eurofins.com>]
Sent: Monday, 13 March 2017 1:11 PM
To: Carter, Harriet <Harriet.Carter@coffey.com>
Subject: RE: Esky pickup

Was this for one esky?

Kind regards,

Cassie Hasan
Laboratory Assistant

Phone : +61 8 9251 9692
Email : EnviroSampleWA@eurofins.com

From: Enviro Sample WA
Sent: Monday, 13 March 2017 1:10 PM
To: 'Carter, Harriet'
Subject: RE: Esky pickup

Hi Harriet,

No problem, I will book a courier now.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100													
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200	Email: Richelle.Bunbury@coffey.com											
		Invoices to: Accounts.Burb@coffey.com		Phone:	Email: Harriet.Carter@coffey.com										
Project No: ENAUPERT04483AA Task No: Monitoring Event 16				Analysis Request Section											
Project Name: NL_Baseline GW_SW Monitoring LAB MGT				Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury															
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn															
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.0005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)									
	MW50	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW51	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW52	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW53	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW54	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW48	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW49	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW43	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW44	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	MW34	14/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		
	SWL19_1	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL19_3	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL20_1	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL20_2	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL20_3	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL22_1	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL22_2	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	SWL22_2	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
	QC 327	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	
RELINQUISHED BY					RECEIVED BY										
Name: H.CARTER		Date: 14/03/2017		Name: CASSIE HASAN		Date:		537847							
Coffey Environments		Time:		Company: EUROFINS		Time:									
*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative															

Enviro Sample WA

From: Carter, Harriet <Harriet.Carter@coffey.com>
Sent: Wednesday, 15 March 2017 7:17 AM
To: Enviro Sample WA
Subject: RE: Northlink Samples received 14/3

Follow Up Flag: Follow up
Flag Status: Completed

Hi Cassie,

Sorry for that. If they can please be labelled as **SWL21_1, SWL21_2 and SWL21_3** as per bottles. **SWL22 is incorrect.**

SWL22 will be sampled today instead.

Kind regards,

Harriet Carter
Environmental Scientist

t: +61 8 9269 6200
f: +61 8 9269 6299
m: +61 417 096 638
w: coffey.com

>>> **Ingenuity@coffey** – it's the ideas that count

From: EnviroSampleWA@eurofins.com [<mailto:EnviroSampleWA@eurofins.com>]
Sent: Tuesday, 14 March 2017 4:17 PM
To: Carter, Harriet <Harriet.Carter@coffey.com>
Cc: Mary Makarios <MaryMakarios@eurofins.com>
Subject: Northlink Samples received 14/3

Hi Harriet,

Thanks for sending your samples to us today.

There were some discrepancies in the samples received against the COC attached above.

Samples not received:

SWL22_1 and SWL22_2

Additional Samples received (not on COC):

SWL21_1, SWL21_2 and SWL21_3

Would you like these to be logged as COC (eg. SWL22) or would you like them to be logged as labelled on the bottles?

Kind Regards,

Cassie Hasan
Laboratory Assistant

Eurofins | mgt
Unit 2, 91 Leach Highway
KEWDALE WA 6105
Australia

Phone : +61 8 9251 9692

Email : EnviroSampleWA@eurofins.com

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

~~COPY~~



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 16	Analysis Request Section											
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury												
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	MW33	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW35	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW36	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW37	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW38	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW39	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW45	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW46	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW47	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	SWL18_1	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18_2	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL18_3	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL22_1	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL22_2	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL22_3	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_1	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_2	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16_3	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC336	15/03/2017	AM	Water	1xP	5 days			X									Dissolved only
	QC337	15/03/2017	AM	Water	1xP	5 days			X									Dissolved only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 15/03/2017	Name: Date: 15/3
Coffey Environments Time:	Company: Time: 5pm

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

538122

Reference No. _____

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 16
 Project Name: NL_Baseline GW_SW Monitoring LAB MGT
 Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES
	SWL15_1	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL15_2	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC333	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC334	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC335	15/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC331	15/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY			RECEIVED BY		
Name:	H.CARTER	Date:	15/03/2017	Name:	
	Coffey Environments	Time:		Date:	
				Company:	
				Time:	

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 16	Analysis Request Section											
Project Name:	NL_Baseline GW_SW Monitoring	LAB	MGT	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
Sampler's Name:	Harriet Carter	Project Manager: Richelle Bunbury													
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn														
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L															
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN															

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OC (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	MW24	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW25	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW26	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW27	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW18	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW17	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW29	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW30	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW19	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW20	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW21	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW40	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW41	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	MW42	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-1	16/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
	QC338	16/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X						
	QC338 QC339	16/03/2017	AM	Water	1xP	5 days			X									Dissolved only
	QC337 QC340	16/03/2017	AM	Water	1xP	5 days			X									Dissolved only

RELINQUISHED BY	RECEIVED BY
Name: L. Wynne Date: 16/03/2017	Name: CASSIE HASAN Date: 16/3/17
Coffey Environments Time:	Company: EUROFINS Time: 4:00 PM

#538 272

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

Enviro Sample WA

From: Carter, Harriet <Harriet.Carter@coffey.com>
Sent: Monday, 20 March 2017 7:25 AM
To: Enviro Sample WA
Subject: RE: Eskies pickup

Hi Cassie,

Sorry- yes please proceed with analysis if you have not done so.

Thanks,
Harriet.

From: EnviroSampleWA@eurofins.com [<mailto:EnviroSampleWA@eurofins.com>]
Sent: Friday, 17 March 2017 4:33 PM
To: Carter, Harriet <Harriet.Carter@coffey.com>
Cc: Bunbury, Richelle <Richelle.Bunbury@coffey.com>
Subject: RE: Eskies pickup

Hi Harriet,

We have received your samples. There is one sample MW1 received that was not listed on the COC (500ml plastic, 2x60ml unpreserved plastic and 1x60ml preserved plastic). Please advise if you would like to proceed with analysis for this sample?

Kind regards,

Cassie Hasan
Laboratory Assistant

Phone : +61 8 9251 9692
Email : EnviroSampleWA@eurofins.com

From: Carter, Harriet [<mailto:Harriet.Carter@coffey.com>]
Sent: Friday, 17 March 2017 3:03 PM
To: Enviro Sample WA
Subject: Eskies pickup

Good afternoon,

I have 2 eskies for pickup this afternoon. They will be ready at 330.

Thanks
Harriet

Sent from my Windows Phone

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Enviro Sample WA

From: Bunbury, Richelle <Richelle.Bunbury@coffey.com>
Sent: Monday, 20 March 2017 10:16 AM
To: Enviro Sample WA
Cc: Carter, Harriet
Subject: RE: Extra sample received. Eurofins | mgt Sample Receipt Advice - Report 538465 : Site NL_BASELINE GW_SW MONITORING (ENAUPERT04483AA)

Follow Up Flag: Follow up
Flag Status: Completed

Hi there,

Yes please proceed with analysis of MW1. Sample parameters to be tested as MW9.

Kind Regards
Richelle

Richelle Bunbury
Senior Environmental Scientist
Part-time: available Monday - Thursday

Suite 2, 53 Burswood Road
Burswood WA
t: +61 8 9269 6200
m: +61 488 770 056



>>> Ingenuity@coffey – it's the ideas that count

From: EnviroSampleWA@eurofins.com [<mailto:EnviroSampleWA@eurofins.com>]
Sent: Friday, 17 March 2017 5:50 PM
To: Bunbury, Richelle <Richelle.Bunbury@coffey.com>
Cc: Carter, Harriet <Harriet.Carter@coffey.com>
Subject: Extra sample received. Eurofins | mgt Sample Receipt Advice - Report 538465 : Site NL_BASELINE GW_SW MONITORING (ENAUPERT04483AA)

Dear Valued Client,

Please note: Sample MW1 received that was not listed on COC. Please advise if you would like to proceed

with testing.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Please send all reply correspondence to EnviroSampleWA@Eurofins.com noting the Eurofins Lab Reference in the subject header.

Kind regards

Cassie Hasan
Laboratory Assistant

Eurofins | MGT
Unit 2, 91 Leach Highway
Kewdale WA 6105
AUSTRALIA
Phone: +61 0 9251 9692

[EnviroNote 1071 - QSM 5.1](#)
[EnviroNote 1069 - Eurofins Overnight TAT](#)

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 16
Project Name:	NL Baseline GW_SW Monitoring	LAB	MGT
Sampler's Name:	Harriet Carter	Project Manager:	Richelle Bunbury
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	
✓	MW2	20/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW3	20/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW4	20/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
✓	MW55	20/03/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X		X			
✓	SWL1_1	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL1_2	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL1_3	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL2_1	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL2_2	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL2_3	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL3_1	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL3_2	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	SWL3_3	20/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	
✓	QC344	20/03/2017	AM	Water	1xP	5 days				X								Dissolved only
✓	QC345	20/03/2017	AM	Water	1xP	5 days				X								Dissolved only

RELINQUISHED BY	RECEIVED BY
Name: H.CARTER Date: 20/03/2017	Name: <i>Yuriko S</i> Date: <i>20/3/17</i>
Coffey Environments Time:	Company: <i>Environ Plan</i> Time: <i>15:44</i>

538680

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***Container Type & Preservation Codes:** P - Plastic, G- Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office:	Suite 2, 53 Burswood Road, Burswood, WA, 6100		
Report Results to:	Richelle Bunbury, Harriet Carter	Mobile:	(08) 9269 6200
		Email:	Richelle.Bunbury@coffey.com
Invoices to:	Accounts.Burb@coffey.com	Phone:	
		Email:	Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 16 - march							Analysis Request Section														
Project Name: NL_Baseline GW_SW Monitoring LAB ALS							Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus BI OPP/OCF (trace) Alkalinity 4 -speciated Turbidity E.coli, thermotolerant bacter	<div style="border: 1px solid black; padding: 5px; text-align: center;">NOTES</div>													
Sampler's Name: Harriet Carter Project Manager: Richelle Bunbury																					
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																					
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L																					
Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																					
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	X	X	X	X	X	X									
1	QC328	14/03/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X									

Environmental Division
Perth
Work Order Reference
EP1702376

Telephone : + 61-8-9209 7655

RELINQUISHED BY			RECEIVED BY		
Name: H.CARTER	Date: 14/03/2017		Name: <i>m Warkell</i>	Date: <i>14/3/17</i>	
Coffey Environments	Time:		Company: <i>ALS</i>	Time: <i>16h5</i>	

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100

Report Results to:

Richelle Bunbury, Harriet Carter

Mobile:

(08) 9269 6200

Email:

Richelle.Bunbury@coffey.com

Invoices to:

Accounts.Burb@coffey.com

Phone:

Email:

Harriet.Carter@coffey.com

Project No:

ENAUPERT04483AA

Task No:

Monitoring Event 16

Project Name:

NL_Baseline GW_SW Monitoring Laboratory:

MGT

Sampler's Name:

Project Manager: Richelle Bunbury

Special Instructions:

Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn

Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.0005mg/L

Major cations and anions: (CO₃, HCO₃, OH, SO₄, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH₃, NO₂, NO₃, TN

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
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	MW54	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW53	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW52	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW51	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW50	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW49	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW48	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW47	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW46	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW45	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	MW43	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X	X	X	X				
	SWL20-1	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X				
	SWL20-2	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X				
	SWL20-3	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X	X	X	X				
	QC350	10/04/2017	AM	Water	1 x P	5 days													
	QC351	10/04/2017	AM	Water	1 x P	5 days													
	QC352	10/04/2017	AM	Water	5 x P	5 days													

RECEIVED BY	RELINQUISHED BY
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Name: CHASSIE HASAN Company: EUROFINIS Date: 10/4/17 Time:	Name: Coffey Environments Date: Time:
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Name: Date: Time:	Name: Date: Time:
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*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

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-
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541792



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100																	
		Report Results to: Richelle Bunbury, Harriet Carter	Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com																
		Invoices to: Accounts.Burb@coffey.com	Phone: _____ Email: Harriet.Carter@coffey.com																
Project No: ENAUPERT04483AA Task No: Monitoring Event 10		Analysis Request Section																	
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT		Physical Parameters (pH, EC, TDS) Major Anions and Cations Total and dissolved metals Nitrogens - speciated Total Phosphorus Total reactive phosphorus B1 OPP/OCp (trace) Alkalinity 4 - speciated Turbidity E.coli, thermotolerant bacter	NOTES																
Sampler's Name: _____ Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	SWL10-2	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL10-2	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL19-1	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL18-3	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL18-2	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL18-1	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL22-1	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL22-2	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
	SWL22-3	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X		
RELINQUISHED BY					RECEIVED BY														
Name: _____		Date: _____		➔		Name: CASSIE HASAN		Date: 10/4/17											
Coffey Environments		Time: _____				Company: EUROFINIS		Time: _____											
Name: _____		Date: _____		➔		Name: _____		Date: _____											
Company: _____		Time: _____				Company: _____		Time: _____											
*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative																			

NO seals.
 19.5
 21.7
 21.8
 541792
 0.0

 21.0°C

Enviro Sample WA

From: Carter, Harriet <Harriet.Carter@coffey.com>
Sent: Tuesday, 11 April 2017 4:50 PM
To: Enviro Sample WA
Cc: Bunbury, Richelle
Subject: RE: Northlink Baseline samples 11/4/17

Thanks Cassie- yes please proceed ☺

Kind regards,

Harriet Carter
Environmental Scientist

t: +61 8 9269 6200
f: +61 8 9269 6299
m: +61 417 096 638
w: coffey.com

>>> Ingenuity@coffey – it's the ideas that count

From: EnviroSampleWA@eurofins.com [<mailto:EnviroSampleWA@eurofins.com>]
Sent: Tuesday, 11 April 2017 4:45 PM
To: Carter, Harriet <Harriet.Carter@coffey.com>
Cc: Bunbury, Richelle <Richelle.Bunbury@coffey.com>
Subject: Northlink Baseline samples 11/4/17

Hi Harriet,

Thanks for your samples today. We received the following additional samples that were not listed on the COC:

SWL3-1
SWL3-2
SWL3-3

Please advise if you would like to proceed with analysis for these samples.

Kind Regards,

Cassie Hasan
Laboratory Assistant

Eurofins | mgt
Unit 2, 91 Leach Highway
KEWDALE WA 6105
Australia

Phone : +61 8 9251 9692
Email : EnviroSampleWA@eurofins.com

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 17							Analysis Request Section												
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES	
Sampler's Name: Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	MW27	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW26	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW25	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW24	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW23	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW15	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW14	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW13	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW11	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	QC358	12/04/2017	AM	Water	1 x P	5 days												Dissolved Metals Only	
	QC359	12/04/2017	AM	Water	1 x P	5 days												Dissolved Metals Only	

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name: CASSIE HASAN	Date:	12/4/17	# 542216 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <div style="border: 1px solid black; width: 50px; height: 40px; margin: 10px auto;"></div>	
Coffey Environments	Time:		Company: EUROFINS	Time:	2:58 PM		
Name:	Date:	→	Name:	Date:			
Company:	Time:		Company:	Time:			

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 17							Analysis Request Section												
Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteria	NOTES	
Sampler's Name: Project Manager: Richelle Bunbury																			
Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn																			
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN																			
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)													
	MW27	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW26	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW25	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW24	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW23	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW15	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW14	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW13	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW11	12/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	QC358	12/04/2017	AM	Water	1 x P	5 days											Dissolved Metals Only		
	QC359	12/04/2017	AM	Water	1 x P	5 days											Dissolved Metals Only		

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name: CASSIE HASAN	Date:	12/4/17	# 542216 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Coffey Environments	Time:		Company: EUROFINS	Time:	2:58 PM		
Name:	Date:	→	Name:	Date:		<input type="checkbox"/> <input type="checkbox"/>	
Company:	Time:		Company:	Time:			

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No:	ENAUPERT04483AA	Task No:	Monitoring Event 17
Project Name:	NL_Baseline GW_SW Monitoring Laboratory: MGT		
Sampler's Name:	Project Manager: Richelle Bunbury		
Special Instructions:	Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn		
Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L			
Major cations and anions: (CO ₃ , HCO ₃ , OH, SO ₄ , Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH ₃ , NO ₂ , NO ₃ , TN			

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES	
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacter		
	MW22	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW21	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW20	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW19	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW18	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW17	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW16	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW29	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW30	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW31	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW32	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW33	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW34	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	MW35	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	QC360	13/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X				
	QC361	13/04/2017	AM	Water	1 x P	5 days													Dissolved Metals Only
	QC362	13/04/2017	AM	Water	1 x P	5 days													Dissolved Metals Only

RELINQUISHED BY		RECEIVED BY	
Name:	Date:	Name:	Date:
Coffey Environments		Jimmy	13/4
	Time:	Company:	Time:
		eurolas	
Name:	Date:	Name:	Date:
Company:	Time:	Company:	Time:

542675

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project Information							Analysis Request Section											NOTES
Project No:	Task No:	Project Name:	Project Manager:	Special Instructions:	Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L	Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 -speciated	Turbidity	E.coli, thermotolerant bacteria	
Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)												
	MW55 ✓	18/04/2017	AM	Water	4 x P, 1 x A, 2 x V	5 days	X	X	X	X	X	X	X		X			
	MW44 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW42 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW41 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW40 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW39 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW38 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW37 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	MW36 ✓	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X		X				
	QC 368 369 ✓	18/04/2017	AM	Water	1 x P	5 days											Dissolved Metals Only	
	QC 369 370 ✓	18/04/2017	AM	Water	1 x P	5 days												Dissolved Metals Only

RELINQUISHED BY				RECEIVED BY			
Name:	Date:	→	Name:	Date:			
Coffey Environments	Time:		Company:	Time:			
Name:	Date:	→	Name:	Date:	18/4/17 Perth	19/4/17	
Company:	Time:		Company:	Time:	3:16pm	Metb.	542831

*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 17
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: MGT
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix (Soil...etc)	Container Type & Preservative*	T-A-T (specify)	Analysis Request Section											NOTES
							Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/OCF (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacteri	
	SWL15-1	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL15-2	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-1	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-2	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL16-3	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-1	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-2	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	
	SWL17-3	18/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X	X	X	

RELINQUISHED BY			RECEIVED BY		
Name:	Date:	→	Name:	Date:	
Coffey Environments	Time:		Company:	Time:	
Name:	Date:	→	Name:	Date:	
Company:	Time:		Company:	Time:	

NO Seal.
 Lieblich
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*Container Type & Preservation Codes: P - Plastic, G - Glass Bottle, J - Glass Jar, V - Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST



Consigning Office: Suite 2, 53 Burswood Road, Burswood, WA, 6100
 Report Results to: Richelle Bunbury, Harriet Carter Mobile: (08) 9269 6200 Email: Richelle.Bunbury@coffey.com
 Invoices to: Accounts.Burb@coffey.com Phone: Email: Harriet.Carter@coffey.com

Project No: ENAUPERT04483AA Task No: Monitoring Event 16
 Project Name: NL_Baseline GW_SW Monitoring Laboratory: ALS
 Sampler's Name: Project Manager: Richelle Bunbury
 Special Instructions: Please invoice according to Quote # 151113CEW, total and dissolved metals: Al, As, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Hg, Se, Zn
 Dissolved metals are to be laboratory filtered, Cd LOR to be lowered to 0.00005mg/L
 Major cations and anions: (CO3, HCO3, OH, SO4, Cl, Alkali Metals (Na, Ca, K, Mg), Acidity); Nitrogen speciated: TKN, NH3, NO2, NO3, TN

Analysis Request Section

Lab No.	Sample ID	Sample Date	Time	Matrix <i>(Soil...etc)</i>	Container Type & Preservative*	T-A-T <i>(specify)</i>	Physical Parameters (pH, EC, TDS)	Major Anions and Cations	Total and dissolved metals	Nitrogens - speciated	Total Phosphorus	Total reactive phosphorus	B1	OPP/DCP (trace)	Alkalinity 4 - speciated	Turbidity	E.coli, thermotolerant bacter	NOTES
	QC346	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC347	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC348	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC349	10/04/2017	AM	Water	4 x P	5 days	X	X	X	X	X	X			X			
	QC353	10/04/2017	AM	Water	5 x P	5 days	X	X	X	X	X	X			X	X	X	

Environmental Division
 Perth
 Work Order Reference
EP1703477



Telephone: + 61-8-9209 7555

RELINQUISHED BY		RECEIVED BY	
Name: _____	Date: _____	Name: SARA	Date: 10/4/17
Coffey Environments	Time: _____	Company: ALS	Time: 4:00

*Container Type & Preservation Codes: P - Plastic, G- Glass Bottle, J - Glass Jar, V- Vial, Z - Ziplock bag, N - Nitric Acid Preserved, C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice, ST - Sodium Thiosulfate, NP - No Preservative



APPENDIX H

Laboratory Documentation

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NORTHLING (NL)**
Project ID: **ENAUPERT04268AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 15, 2015 8:46 AM**
Eurofins | mgt reference: **483398**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NORTHLINK (NL)**
Project ID: **ENAUPERT04268AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 16, 2015 8:45 AM**
Eurofins | mgt reference: **483591**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **483591-W**
 Project name **NORHLINK (NL)**
 Project ID **ENAUPERT04268AA**
 Received Date **Dec 16, 2015**

Client Sample ID			GW05	NL-BH24	5514	5399
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De16302	M15-De16303	M15-De16304	M15-De16305
Date Sampled			Dec 15, 2015	Dec 15, 2015	Dec 15, 2015	Dec 15, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	28	42	34
Ammonia (as N)	0.01	mg/L	0.07	0.37	0.10	0.22
Chloride	1	mg/L	24	53	47	52
Conductivity (at 25°C)	1	uS/cm	190	220	200	310
Nitrate & Nitrite (as N)	0.05	mg/L	0.23	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.18	< 0.02	0.03	0.02
Nitrite (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.0	5.5	5.1	5.9
Phosphate total (as P)	0.05	mg/L	0.36	0.57	0.17	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	0.28	0.47	0.11	< 0.05
Sulphate (as S)	5	mg/L	6.9	< 5	< 5	13
Total Dissolved Solids	10	mg/L	^{Q19} 160	^{Q19} 190	^{Q19} 270	^{Q19} 220
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	1.2	2.2	0.8
Total Nitrogen (as N)	0.2	mg/L	1.2	1.2	2.2	0.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	36	25	23	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	36	25	23	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.24	0.60	1.6	0.96
Aluminium (filtered)	0.05	mg/L	0.13	0.60	1.2	0.75
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.003	0.003	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.006	< 0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.3	0.23	2.5	7.0
Iron (filtered)	0.05	mg/L	0.77	0.21	1.5	7.0
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			GW05	NL-BH24	5514	5399
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De16302	M15-De16303	M15-De16304	M15-De16305
Date Sampled			Dec 15, 2015	Dec 15, 2015	Dec 15, 2015	Dec 15, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	0.001	mg/L	< 0.001	0.001	0.002	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.005	0.002	0.002
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	17	2.6	4.7	5.4
Magnesium	0.5	mg/L	4.4	4.3	4.2	11
Magnesium (filtered)	0.5	mg/L	4.4	4.3	4.2	11
Potassium	0.5	mg/L	1.3	2.2	4.3	1.9
Sodium	0.5	mg/L	16	32	25	33

Client Sample ID			555F1	555F2	555F3	QC3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De16306	M15-De16307	M15-De16308	M15-De16309
Date Sampled			Dec 15, 2015	Dec 15, 2015	Dec 15, 2015	Dec 15, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	14
Ammonia (as N)	0.01	mg/L	0.05	0.09	0.17	0.07
Chloride	1	mg/L	80	77	69	25
Conductivity (at 25°C)	1	uS/cm	420	410	390	200
Nitrate & Nitrite (as N)	0.05	mg/L	0.22	0.28	1.5	0.21
Nitrate (as N)	0.02	mg/L	0.17	0.23	1.5	0.17
Nitrite (as N)	0.02	mg/L	0.05	0.05	0.05	0.05
pH	0.1	pH Units	7.4	7.1	6.8	7.0
Phosphate total (as P)	0.05	mg/L	0.82	0.80	0.99	0.37
Phosphorus filterable reactive (as P)	0.05	mg/L	0.73	0.70	0.83	0.29
Sulphate (as S)	5	mg/L	8.8	9.1	10	6.3
Total Dissolved Solids	10	mg/L	260	270	230	^{Q19} 150
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	1.1	1.3	1.0
Total Nitrogen (as N)	0.2	mg/L	1.4	1.4	2.8	1.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	43	37	38
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	54	43	37	38
Heavy Metals						
Aluminium	0.05	mg/L	0.10	0.23	0.22	0.19
Aluminium (filtered)	0.05	mg/L	0.07	0.13	0.07	0.17
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.002	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001

Client Sample ID			555F1	555F2	555F3	QC3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De16306	M15-De16307	M15-De16308	M15-De16309
Date Sampled			Dec 15, 2015	Dec 15, 2015	Dec 15, 2015	Dec 15, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Iron	0.05	mg/L	0.59	0.71	1.3	1.1
Iron (filtered)	0.05	mg/L	0.34	0.35	0.61	0.73
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.008	0.005	0.003
Zinc (filtered)	0.001	mg/L	0.006	0.006	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	19	18	19	17
Magnesium	0.5	mg/L	9.1	8.9	8.4	4.5
Magnesium (filtered)	0.5	mg/L	9.1	8.9	8.4	4.5
Potassium	0.5	mg/L	15	15	14	1.3
Sodium	0.5	mg/L	42	41	38	16
Pathogens						
E.coli	1	MPN/100mL	460	330	790	-
Thermotolerant Coliforms	1	MPN/100mL	3500	1700	>16000	-

Client Sample ID			QC5	QC6
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M15-De16310	M15-De16311
Date Sampled			Dec 15, 2015	Dec 15, 2015
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001
Alkali Metals				
Magnesium (filtered)	0.5	mg/L	< 0.5	< 0.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Dec 16, 2015	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 16, 2015	28 Day
Chloride - Method: MGT 1100A	Melbourne	Dec 16, 2015	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 16, 2015	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 16, 2015	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 16, 2015	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 16, 2015	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 16, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Dec 16, 2015	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Dec 16, 2015	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 16, 2015	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 16, 2015	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 17, 2015	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 17, 2015	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 17, 2015	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 16, 2015	180 Day
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Dec 16, 2015	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Dec 16, 2015	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Dec 16, 2015	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 16, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 17, 2015	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	105			70-130	Pass	
Ammonia (as N)	%	102			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Chloride	%	100	70-130	Pass			
Nitrate & Nitrite (as N)	%	94	70-130	Pass			
Nitrate (as N)	%	94	70-130	Pass			
Nitrite (as N)	%	112	70-130	Pass			
Phosphate total (as P)	%	108	70-130	Pass			
Sulphate (as S)	%	100	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	112	70-130	Pass			
Total Nitrogen (as N)	%	112	70-130	Pass			
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	110	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	100	80-120	Pass			
Aluminium (filtered)	%	100	80-120	Pass			
Arsenic	%	101	80-120	Pass			
Arsenic (filtered)	%	101	80-120	Pass			
Cadmium	%	100	80-120	Pass			
Cadmium (filtered)	%	100	80-120	Pass			
Chromium	%	99	80-120	Pass			
Chromium (filtered)	%	99	80-120	Pass			
Copper	%	99	80-120	Pass			
Copper (filtered)	%	99	80-120	Pass			
Iron	%	102	80-120	Pass			
Iron (filtered)	%	102	80-120	Pass			
Lead	%	99	80-120	Pass			
Lead (filtered)	%	99	80-120	Pass			
Mercury	%	102	75-125	Pass			
Mercury (filtered)	%	102	70-130	Pass			
Nickel	%	100	80-120	Pass			
Nickel (filtered)	%	100	80-120	Pass			
Selenium	%	104	80-120	Pass			
Selenium (filtered)	%	104	80-120	Pass			
Zinc	%	106	80-120	Pass			
Zinc (filtered)	%	106	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	98	70-130	Pass			
Magnesium	%	103	70-130	Pass			
Magnesium (filtered)	%	103	70-130	Pass			
Potassium	%	99	70-130	Pass			
Sodium	%	99	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Ammonia (as N)	M15-De16482	NCP	%	100	70-130	Pass	
Nitrate & Nitrite (as N)	M15-De16482	NCP	%	92	70-130	Pass	
Nitrate (as N)	M15-De16482	NCP	%	90	70-130	Pass	
Nitrite (as N)	M15-De16482	NCP	%	104	70-130	Pass	
Phosphate total (as P)	M15-De16302	CP	%	95	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B15-De15598	NCP	%	90	70-130	Pass	
Total Nitrogen (as N)	B15-De15598	NCP	%	90	70-130	Pass	
Spike - % Recovery							
Alkalinity (speciated)				Result 1			

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Bicarbonate Alkalinity (as CaCO ₃)	M15-De16627	NCP	%	75			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M15-De16183	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	B15-De18585	NCP	%	80			75-125	Pass	
Arsenic (filtered)	M15-De16302	CP	%	96			70-130	Pass	
Cadmium (filtered)	M15-De16302	CP	%	97			70-130	Pass	
Chromium (filtered)	M15-De16302	CP	%	97			70-130	Pass	
Copper (filtered)	M15-De16302	CP	%	95			70-130	Pass	
Iron (filtered)	S15-De16842	NCP	%	91			70-130	Pass	
Lead (filtered)	M15-De16302	CP	%	95			70-130	Pass	
Mercury (filtered)	M15-De16302	CP	%	95			70-130	Pass	
Nickel (filtered)	M15-De16302	CP	%	94			70-130	Pass	
Selenium (filtered)	M15-De16302	CP	%	97			70-130	Pass	
Zinc (filtered)	M15-De16302	CP	%	123			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M15-De16302	CP	%	105			70-130	Pass	
Magnesium	M15-De17697	NCP	%	109			70-130	Pass	
Magnesium (filtered)	S15-De18592	NCP	%	109			70-130	Pass	
Potassium	M15-De16302	CP	%	99			70-130	Pass	
Sodium	M15-De16302	CP	%	101			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M15-De16224	NCP	%	100			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-De16305	CP	%	102			75-125	Pass	
Cadmium	M15-De16305	CP	%	104			75-125	Pass	
Chromium	M15-De16305	CP	%	104			75-125	Pass	
Copper	M15-De16305	CP	%	101			75-125	Pass	
Lead	M15-De16305	CP	%	102			75-125	Pass	
Mercury	M15-De16305	CP	%	103			70-130	Pass	
Nickel	M15-De16305	CP	%	101			75-125	Pass	
Selenium	M15-De16305	CP	%	110			75-125	Pass	
Zinc	M15-De16305	CP	%	105			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M15-De16309	CP	%	103			70-130	Pass	
Phosphorus filterable reactive (as P)	M15-De16309	CP	%	100			70-130	Pass	
Sulphate (as S)	M15-De16309	CP	%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M15-De16302	CP	mg/L	12	13	8.0	30%	Pass	
Ammonia (as N)	M15-De16685	NCP	mg/L	0.41	0.42	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M15-De16685	NCP	mg/L	0.06	0.06	2.0	30%	Pass	
Nitrate (as N)	M15-De16685	NCP	mg/L	0.06	0.06	2.0	30%	Pass	
Nitrite (as N)	M15-De16685	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	M15-De16302	CP	mg/L	0.36	0.38	4.0	30%	Pass	
Total Dissolved Solids	M15-De16186	NCP	mg/L	39000	38000	3.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M15-De16302	CP	mg/L	1.0	1.1	6.1	30%	Pass	
Total Nitrogen (as N)	M15-De16302	CP	mg/L	1.2	1.3	6.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M15-De16302	CP	mg/L	0.13	0.16	21	30%	Pass
Arsenic (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M15-De16302	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M15-De16302	CP	mg/L	0.77	0.71	7.0	30%	Pass
Lead (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M15-De16302	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M15-De16302	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M15-De16302	CP	mg/L	0.002	0.002	2.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Magnesium	M15-De17697	NCP	mg/L	76	77	2.0	30%	Pass
Magnesium (filtered)	S15-De18592	NCP	mg/L	130	130	3.0	30%	Pass
Potassium	M15-De17697	NCP	mg/L	17	17	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
pH	M15-De16303	CP	pH Units	5.5	5.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M15-De16303	CP	mg/L	25	21	18	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M15-De16303	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M15-De16303	CP	mg/L	25	21	18	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M15-De16305	CP	mg/L	0.96	0.94	2.0	30%	Pass
Arsenic	M15-De16305	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M15-De16305	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-De16305	CP	mg/L	0.005	0.005	6.0	30%	Pass
Copper	M15-De16305	CP	mg/L	0.003	0.003	11	30%	Pass
Iron	M15-De16305	CP	mg/L	7.0	7.1	1.0	30%	Pass
Lead	M15-De16305	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	M15-De16305	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-De16305	CP	mg/L	0.003	0.003	19	30%	Pass
Selenium	M15-De16305	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M15-De16305	CP	mg/L	0.002	0.002	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M15-De16309	CP	mg/L	25	25	<1	30%	Pass
Phosphorus filterable reactive (as P)	M15-De16309	CP	mg/L	0.29	0.29	1.1	30%	Pass
Sulphate (as S)	M15-De16309	CP	mg/L	6.3	6.3	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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CERTIFICATE OF ANALYSIS

Work Order	: EP1517067	Page	: 1 of 5
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
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Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04268AA Northlink (NL)	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 15-Dec-2015 16:00
C-O-C number	: ----	Date Analysis Commenced	: 16-Dec-2015
Sampler	: CHRISTOPHER JOWSEY	Issue Date	: 23-Dec-2015 15:20
Site	: ----		
Quote number	: ----	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

Dilani Fernando
Jeremy Truong

Senior Inorganic Chemist
Laboratory Supervisor

Melbourne Inorganics, Springvale, VIC
Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- Dissolved and total metals conducted by ALS Melbourne, NATA accreditation no. 825, site no 13778
- ED041G (Sulfate Turbidimetric): LOR for sample raised due to possible sample matrix interference.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC4	----	----	----	----
Client sampling date / time			[15-Dec-2015]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1517067-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.60	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	186	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	212	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	34	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	34	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	14	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	26	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	17	----	----	----	----
Magnesium	7439-95-4	1	mg/L	4	----	----	----	----
Sodium	7440-23-5	1	mg/L	18	----	----	----	----
Potassium	7440-09-7	1	mg/L	1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.16	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.010	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.81	----	----	----	----
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC4	----	----	----	----
Client sampling date / time				[15-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517067-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Aluminium	7429-90-5	0.01	mg/L	0.21	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.013	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.99	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.16	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.16	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.1	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.41	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.22	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	1.41	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC4	----	----	----	----
Client sampling date / time				[15-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517067-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	1.99	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1517067	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04268AA Northlink (NL)	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 15-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 16-Dec-2015
Sampler	: CHRISTOPHER JOWSEY	Issue Date	: 23-Dec-2015
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 312019)									
EP1517053-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.29	7.34	0.684	0% - 20%
EP1517073-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.12	6.07	0.820	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 312021)									
EP1517080-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1210	1220	0.248	0% - 20%
EP1517073-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	720	730	1.38	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 312703)									
EP1517067-001	QC4	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	212	185	13.4	0% - 20%
EP1517099-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1520	1530	0.525	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 312018)									
EP1517057-007	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	117	118	1.17	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	117	118	1.17	0% - 20%
EP1517053-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	22	20	6.27	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	22	20	6.27	0% - 20%
ED038A: Acidity (QC Lot: 316195)									
EP1517029-005	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	8	8	0.00	No Limit
EP1517072-004	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	16	17	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 311812)									
EP1517053-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 311814)									
EP1517053-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	5	5	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 311635)									
EP1517053-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	8	8	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	3	3	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 316386)									
EM1518638-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	95.8	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 316386) - continued									
EM1518638-001	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.005	0.004	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.022	0.022	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.015	0.014	7.45	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EP1517077-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0003	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.008	0.009	13.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.037	0.036	3.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.131	0.137	4.86	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.148	0.147	0.00	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.07	0.07	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 316377)									
EP1517029-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.014	0.013	0.00	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.05	0.09	54.5	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	4.28	3.97	7.50	0% - 20%
EP1517069-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 316377) - continued									
EP1517069-003	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 316387)									
EM1518653-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1517067-001	QC4	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 314633)									
EM1518552-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1518609-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 311820)									
EP1517067-001	QC4	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.06	0.00	No Limit
EP1517080-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	29.3	30.2	2.96	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 311813)									
EP1517072-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1517053-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 311821)									
EP1517067-001	QC4	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.16	0.16	0.00	0% - 50%
EP1517080-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	19.3	19.6	1.31	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 311674)									
EP1517067-001	QC4	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.8	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 311673)									
EP1517067-001	QC4	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.41	0.28	39.2	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 311815)									
EP1517067-001	QC4	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.22	0.22	0.00	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 312019)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 312021)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 312703)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	95.4	83	111	
				<10	293 mg/L	116	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 312018)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	97.4	76	126	
				<1	200 mg/L	93.6	90	106	
ED038A: Acidity (QCLot: 316195)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	108	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 311812)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	106	89	113	
				<1	100 mg/L	97.6	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 311814)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	103	84	120	
				<1	1000 mg/L	95.9	84	110	
ED093F: Dissolved Major Cations (QCLot: 311635)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.4	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	95.7	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.6	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	94.6	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 316386)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	97.8	93	105	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	94	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.5	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.0	86	110	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	100	87	107	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	94	106	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 316386) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.4	87	109
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	90.1	87	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	87	109
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.6	87	109
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.8	87	107
EG020T: Total Metals by ICP-MS (QCLot: 316377)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	100	108
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.9	94	116
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.4	90	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	102	90	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.6	91	109
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	99	109
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.6	91	111
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.6	91	111
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.7	91	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	103	86	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.9	91	109
EG035F: Dissolved Mercury by FIMS (QCLot: 316387)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	90.6	83	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 314633)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.5	87	113
EK055G: Ammonia as N by Discrete Analyser (QCLot: 311820)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	111	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 311813)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 311821)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.2	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 311674)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	97.0	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 311673)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	110	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 311815)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	97.1	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 311812)							
EP1517053-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	114	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 311814)							
EP1517053-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	100	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 316386)							
EM1518638-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	106	85	131
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	108	81	133
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	99.9	71	135
		EG020A-F: Copper	7440-50-8	0.2 mg/L	87.8	76	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	92.6	75	133
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	95.5	64	134
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	103	73	131
EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	75	131		
EG020T: Total Metals by ICP-MS (QCLot: 316377)							
EP1517028-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	94.6	82	118
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.1	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	80.8	80	118
		EG020A-T: Copper	7440-50-8	1 mg/L	90.2	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	92.6	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	90.8	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	93.5	80	118
EG020A-T: Zinc	7440-66-6	1 mg/L	89.0	74	116		
EG035F: Dissolved Mercury by FIMS (QCLot: 316387)							
EM1518653-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	86.5	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 314633)							
EM1518553-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	84.1	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 311820)							
EP1517067-001	QC4	EK055G: Ammonia as N	7664-41-7	1 mg/L	109	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 311813)							
EP1517053-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	104	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 311821)							
EP1517067-001	QC4	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	98.6	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 311674)							
EP1517067-001	QC4	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	95.8	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 311673)							
EP1517067-001	QC4	EK067G: Total Phosphorus as P	----	1 mg/L	112	70	130

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 Work Order : EP1517067
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04268AA Northlink (NL)



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 311815)							
EP1517067-001	QC4	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	93.4	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1517067	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04268AA Northlink (NL)	Date Samples Received	: 15-Dec-2015
Site	: ----	Issue Date	: 23-Dec-2015
Sampler	: CHRISTOPHER JOWSEY	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC4	----	----	----	16-Dec-2015	15-Dec-2015	1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser						
Miscellaneous Plastic bottle -unpreserved QC4	17-Dec-2015	16-Dec-2015	1	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser						
Miscellaneous Plastic bottle -unpreserved QC4	17-Dec-2015	16-Dec-2015	1	----	----	----

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC4	15-Dec-2015	----	----	----	16-Dec-2015	15-Dec-2015	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC4	15-Dec-2015	----	----	----	16-Dec-2015	12-Jan-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC4	15-Dec-2015	----	----	----	17-Dec-2015	22-Dec-2015	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC4	15-Dec-2015	----	----	----	16-Dec-2015	29-Dec-2015	✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC4	15-Dec-2015	----	----	----	21-Dec-2015	29-Dec-2015	✓



Matrix: **WATER** Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	12-Jan-2016	✔
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	12-Jan-2016	✔
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC4	15-Dec-2015	----	----	----	16-Dec-2015	22-Dec-2015	✔
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC4	15-Dec-2015	----	----	----	21-Dec-2015	12-Jun-2016	✔
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) QC4	15-Dec-2015	21-Dec-2015	12-Jun-2016	✔	23-Dec-2015	12-Jun-2016	✔
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC4	15-Dec-2015	----	----	----	22-Dec-2015	12-Jan-2016	✔
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) QC4	15-Dec-2015	----	----	----	21-Dec-2015	12-Jan-2016	✔
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK055G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	16-Dec-2015	✔
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	17-Dec-2015	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK059G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	17-Dec-2015	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK061G) QC4	15-Dec-2015	17-Dec-2015	16-Dec-2015	✘	17-Dec-2015	14-Jan-2016	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK067G) QC4	15-Dec-2015	17-Dec-2015	16-Dec-2015	✘	17-Dec-2015	14-Jan-2016	✔
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC4	15-Dec-2015	----	----	----	16-Dec-2015	17-Dec-2015	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)

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Work Order : EP1517067
Client : COFFEY ENVIRONMENTS PTY LTD
Project : ENAUPERT04268AA Northlink (NL)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NORTHLINK (NL)**
Project ID: **ENAUPERT04268AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 18, 2015 8:24 AM**
Eurofins | mgt reference: **483996**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
 89-91 Burswood Road
 Burswood
 WA 6100



NATA Accredited
 Accreditation Number 1261
 Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **483996-W**
 Project name NORTHLINK (NL)
 Project ID ENAUPERT04268AA
 Received Date Dec 18, 2015

Client Sample ID			QC7	QC8	QC9	NLBH08
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19435	M15-De19436	M15-De19437	M15-De19438
Date Sampled			Dec 16, 2015	Dec 16, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	-	-	< 10
Ammonia (as N)	0.01	mg/L	-	-	-	0.35
Chloride	1	mg/L	-	-	-	17
Conductivity (at 25°C)	1	uS/cm	-	-	-	180
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	-	< 0.02
pH	0.1	pH Units	-	-	-	6.6
Phosphate total (as P)	0.05	mg/L	-	-	-	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	-	-	-	< 0.05
Sulphate (as S)	5	mg/L	-	-	-	9.7
Total Dissolved Solids	10	mg/L	-	-	-	120
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	-	0.6
Total Nitrogen (as N)	0.2	mg/L	-	-	-	0.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	-	28
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	-	28
Heavy Metals						
Aluminium	0.05	mg/L	-	-	-	2.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.12
Arsenic	0.001	mg/L	-	-	-	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	-	-	-	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	-	-	-	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper	0.001	mg/L	-	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	-	1.4
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.3
Lead	0.001	mg/L	-	-	-	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	-	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			QC7	QC8	QC9	NLBH08
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19435	M15-De19436	M15-De19437	M15-De19438
Date Sampled			Dec 16, 2015	Dec 16, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	0.001	mg/L	-	-	-	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	-	-	0.009
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Alkali Metals						
Calcium	0.5	mg/L	-	-	-	8.4
Magnesium	0.5	mg/L	-	-	-	7.7
Magnesium (filtered)	0.5	mg/L	< 0.5	< 0.5	< 0.5	7.7
Potassium	0.5	mg/L	-	-	-	1.0
Sodium	0.5	mg/L	-	-	-	13

Client Sample ID			GW02	NLBH06	5259	NLBH09
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19439	M15-De19440	M15-De19441	M15-De19442
Date Sampled			Dec 17, 2015	Dec 17, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	17	21	< 10
Ammonia (as N)	0.01	mg/L	0.02	1.3	0.28	0.30
Chloride	1	mg/L	39	70	55	27
Conductivity (at 25°C)	1	uS/cm	680	350	260	280
Nitrate & Nitrite (as N)	0.05	mg/L	1.2	< 0.05	0.13	< 0.05
Nitrate (as N)	0.02	mg/L	1.2	< 0.02	0.13	< 0.02
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.9	5.7	4.3	6.6
Phosphate total (as P)	0.05	mg/L	0.83	< 0.05	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	0.67	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	13	14	16
Total Dissolved Solids	10	mg/L	450	210	160	190
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.7	0.3	0.5
Total Nitrogen (as N)	0.2	mg/L	1.7	1.7	0.4	0.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	280	< 20	< 20	47
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	280	< 20	< 20	47
Heavy Metals						
Aluminium	0.05	mg/L	0.20	0.38	1.9	0.20
Aluminium (filtered)	0.05	mg/L	< 0.05	0.37	1.0	0.13
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.003	0.002	0.002	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001

Client Sample ID			GW02	NLBH06	5259	NLBH09
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19439	M15-De19440	M15-De19441	M15-De19442
Date Sampled			Dec 17, 2015	Dec 17, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Iron	0.05	mg/L	0.32	0.86	7.8	0.57
Iron (filtered)	0.05	mg/L	< 0.05	0.86	2.1	0.50
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.026	0.004	0.003	0.008
Zinc (filtered)	0.001	mg/L	0.015	0.004	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	84	6.0	10	19
Magnesium	0.5	mg/L	7.0	10	4.8	10
Magnesium (filtered)	0.5	mg/L	7.0	10	4.8	10
Potassium	0.5	mg/L	26	5.1	1.6	2.5
Sodium	0.5	mg/L	45	39	29	16

Client Sample ID			4766	GW01	NLBH21	NLBH11
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19443	M15-De19444	M15-De19445	M15-De19446
Date Sampled			Dec 17, 2015	Dec 17, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	14	21	47	11
Ammonia (as N)	0.01	mg/L	0.74	0.23	0.30	0.20
Chloride	1	mg/L	38	60	31	62
Conductivity (at 25°C)	1	uS/cm	270	250	240	260
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	6.0	4.5	4.0	6.3
Phosphate total (as P)	0.05	mg/L	0.10	< 0.05	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	20	12	23	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 230	^{Q19} 190	160	170
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.4	0.5	0.4
Total Nitrogen (as N)	0.2	mg/L	1.3	0.5	0.5	0.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	34
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	34
Heavy Metals						
Aluminium	0.05	mg/L	0.61	1.1	2.9	0.34
Aluminium (filtered)	0.05	mg/L	0.31	0.76	2.6	< 0.05
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			4766	GW01	NLBH21	NLBH11
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De19443	M15-De19444	M15-De19445	M15-De19446
Date Sampled			Dec 17, 2015	Dec 17, 2015	Dec 17, 2015	Dec 17, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.003	0.003	0.003
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	3.4	16	1.3
Iron (filtered)	0.05	mg/L	2.4	2.7	15	1.2
Lead	0.001	mg/L	0.001	0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.004	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.023	0.003	0.004	0.005
Zinc (filtered)	0.001	mg/L	0.013	0.003	0.004	0.003
Alkali Metals						
Calcium	0.5	mg/L	7.8	2.8	3.9	4.5
Magnesium	0.5	mg/L	15	6.9	3.1	3.7
Magnesium (filtered)	0.5	mg/L	15	6.9	3.1	3.7
Potassium	0.5	mg/L	2.0	1.2	1.3	2.0
Sodium	0.5	mg/L	14	33	29	36

Client Sample ID			12282922
Sample Matrix			Water
Eurofins mgt Sample No.			M15-De19447
Date Sampled			Dec 17, 2015
Test/Reference	LOR	Unit	
Acidity (as CaCO₃)			
Acidity (as CaCO ₃)	10	mg/L	14
Ammonia (as N)	0.01	mg/L	0.41
Chloride	1	mg/L	100
Conductivity (at 25°C)	1	uS/cm	650
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
pH	0.1	pH Units	6.2
Phosphate total (as P)	0.05	mg/L	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as S)	5	mg/L	44
Total Dissolved Solids	10	mg/L	^{Q19} 510
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0
Total Nitrogen (as N)	0.2	mg/L	1.0
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	25
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	25

Client Sample ID			12282922
Sample Matrix			Water
Eurofins mgt Sample No.			M15-De19447
Date Sampled			Dec 17, 2015
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium	0.05	mg/L	0.46
Aluminium (filtered)	0.05	mg/L	0.33
Arsenic	0.001	mg/L	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.002
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	0.30
Iron (filtered)	0.05	mg/L	0.18
Lead	0.001	mg/L	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.001	mg/L	0.003
Zinc (filtered)	0.001	mg/L	0.002
Alkali Metals			
Calcium	0.5	mg/L	13
Magnesium	0.5	mg/L	29
Magnesium (filtered)	0.5	mg/L	29
Potassium	0.5	mg/L	1.5
Sodium	0.5	mg/L	63

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Dec 21, 2015	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 21, 2015	28 Day
Chloride - Method: MGT 1100A	Melbourne	Dec 21, 2015	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 21, 2015	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 21, 2015	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 21, 2015	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 21, 2015	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 18, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Dec 21, 2015	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Dec 21, 2015	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 18, 2015	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 21, 2015	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 18, 2015	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 18, 2015	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 18, 2015	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 18, 2015	180 Day
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Dec 18, 2015	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 21, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 18, 2015	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	100			70-130	Pass	
Ammonia (as N)	%	95			70-130	Pass	
Chloride	%	99			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Nitrate & Nitrite (as N)	%	94	70-130	Pass			
Nitrate (as N)	%	94	70-130	Pass			
Nitrite (as N)	%	104	70-130	Pass			
Phosphate total (as P)	%	115	70-130	Pass			
Sulphate (as S)	%	97	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	101	70-130	Pass			
Total Nitrogen (as N)	%	101	70-130	Pass			
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	110	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	110	80-120	Pass			
Aluminium (filtered)	%	110	80-120	Pass			
Arsenic	%	97	80-120	Pass			
Arsenic (filtered)	%	89	80-120	Pass			
Cadmium	%	101	80-120	Pass			
Cadmium (filtered)	%	88	80-120	Pass			
Chromium	%	96	80-120	Pass			
Chromium (filtered)	%	88	80-120	Pass			
Copper	%	90	80-120	Pass			
Copper (filtered)	%	91	80-120	Pass			
Iron	%	94	80-120	Pass			
Iron (filtered)	%	89	80-120	Pass			
Lead	%	93	80-120	Pass			
Lead (filtered)	%	90	80-120	Pass			
Mercury	%	89	75-125	Pass			
Mercury (filtered)	%	89	70-130	Pass			
Nickel	%	92	80-120	Pass			
Nickel (filtered)	%	88	80-120	Pass			
Selenium	%	102	80-120	Pass			
Selenium (filtered)	%	90	80-120	Pass			
Zinc	%	96	80-120	Pass			
Zinc (filtered)	%	91	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	101	70-130	Pass			
Magnesium	%	108	70-130	Pass			
Magnesium (filtered)	%	106	70-130	Pass			
Potassium	%	102	70-130	Pass			
Sodium	%	104	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Heavy Metals				Result 1			
Iron (filtered)	M15-De19422	NCP	%	87	70-130	Pass	
Selenium (filtered)	S15-De18601	NCP	%	87	70-130	Pass	
Spike - % Recovery							
Alkali Metals				Result 1			
Calcium	M15-De19436	CP	%	93	70-130	Pass	
Magnesium	M15-De19436	CP	%	99	70-130	Pass	
Magnesium (filtered)	M15-De19436	CP	%	99	70-130	Pass	
Potassium	M15-De19436	CP	%	93	70-130	Pass	
Sodium	M15-De19436	CP	%	95	70-130	Pass	
Spike - % Recovery							

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Ammonia (as N)	M15-De20226	NCP	%	94			70-130	Pass	
Chloride	M15-De19438	CP	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	M15-De20226	NCP	%	94			70-130	Pass	
Nitrate (as N)	M15-De20226	NCP	%	94			70-130	Pass	
Nitrite (as N)	M15-De20226	NCP	%	102			70-130	Pass	
Phosphate total (as P)	M15-De19438	CP	%	106			70-130	Pass	
Phosphorus filterable reactive (as P)	M15-De19438	CP	%	100			70-130	Pass	
Sulphate (as S)	M15-De19438	CP	%	84			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M15-De19438	CP	%	103			70-130	Pass	
Total Nitrogen (as N)	M15-De19438	CP	%	103			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M15-De20227	NCP	%	99			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M15-De20227	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-De19438	CP	%	99			75-125	Pass	
Cadmium	M15-De19438	CP	%	100			75-125	Pass	
Chromium	M15-De19438	CP	%	99			75-125	Pass	
Copper	M15-De19438	CP	%	102			75-125	Pass	
Iron	M15-De21302	NCP	%	96			75-125	Pass	
Lead	M15-De19438	CP	%	100			75-125	Pass	
Mercury	M15-De19438	CP	%	103			70-130	Pass	
Nickel	M15-De19438	CP	%	98			75-125	Pass	
Selenium	M15-De19438	CP	%	99			75-125	Pass	
Zinc	M15-De19438	CP	%	101			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M15-De19442	CP	%	94			70-130	Pass	
Cadmium (filtered)	M15-De19442	CP	%	97			70-130	Pass	
Chromium (filtered)	M15-De19442	CP	%	98			70-130	Pass	
Copper (filtered)	M15-De19442	CP	%	100			70-130	Pass	
Lead (filtered)	M15-De19442	CP	%	99			70-130	Pass	
Mercury (filtered)	M15-De19442	CP	%	75			70-130	Pass	
Nickel (filtered)	M15-De19442	CP	%	95			70-130	Pass	
Zinc (filtered)	M15-De19442	CP	%	100			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M15-De19447	CP	%	101			70-130	Pass	
Magnesium	M15-De19447	CP	%	104			70-130	Pass	
Magnesium (filtered)	M15-De19447	CP	%	104			70-130	Pass	
Potassium	M15-De19447	CP	%	101			70-130	Pass	
Sodium	M15-De19447	CP	%	102			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M15-De19436	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	M15-De19436	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium (filtered)	M15-De19436	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Potassium	M15-De19436	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M15-De19436	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M15-De20226	NCP	mg/L	0.04	0.04	2.0	30%	Pass
Chloride	M15-De19438	CP	mg/L	17	17	<1	30%	Pass
Conductivity (at 25°C)	M15-De19438	CP	uS/cm	180	180	1.0	30%	Pass
Nitrate & Nitrite (as N)	M15-De20226	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M15-De20226	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M15-De20226	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
pH	M15-De19438	CP	pH Units	6.6	6.6	pass	30%	Pass
Phosphate total (as P)	M15-De19438	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus filterable reactive (as P)	M15-De19438	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M15-De19438	CP	mg/L	9.7	9.7	<1	30%	Pass
Total Dissolved Solids	M15-De19796	NCP	mg/L	5000	4900	1.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M15-De19438	CP	mg/L	0.6	0.6	<1	30%	Pass
Total Nitrogen (as N)	M15-De19438	CP	mg/L	0.6	0.6	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M15-De19438	CP	mg/L	28	32	11	30%	Pass
Carbonate Alkalinity (as CaCO3)	M15-De19438	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M15-De19438	CP	mg/L	28	32	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M15-De19438	CP	mg/L	2.5	2.4	3.0	30%	Pass
Arsenic	M15-De19438	CP	mg/L	0.002	0.002	8.0	30%	Pass
Cadmium	M15-De19438	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-De19438	CP	mg/L	0.006	0.007	7.0	30%	Pass
Copper	M15-De19438	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M15-De19438	CP	mg/L	1.4	1.4	1.0	30%	Pass
Lead	M15-De19438	CP	mg/L	0.001	0.001	3.0	30%	Pass
Mercury	M15-De19438	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-De19438	CP	mg/L	0.002	0.002	7.0	30%	Pass
Selenium	M15-De19438	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M15-De19438	CP	mg/L	0.009	0.010	19	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M15-De19439	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M15-De19442	CP	mg/L	0.13	0.15	17	30%	Pass
Arsenic (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M15-De19442	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M15-De19442	CP	mg/L	0.50	0.47	5.0	30%	Pass
Lead (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M15-De19442	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M15-De19442	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M15-De19442	CP	mg/L	0.002	0.002	4.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M15-De19447	CP	mg/L	13	13	2.0	30%	Pass
Magnesium	M15-De19447	CP	mg/L	29	29	<1	30%	Pass
Magnesium (filtered)	M15-De19447	CP	mg/L	29	29	<1	30%	Pass
Potassium	M15-De19447	CP	mg/L	1.5	1.5	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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CERTIFICATE OF ANALYSIS

Work Order : EP1517278 Client : COFFEY ENVIRONMENTS PTY LTD Contact : RICHELLE BUNBURY Address : SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100 E-mail : richelle.bunbury@coffey.com Telephone : +61 08 6462 7900 Facsimile : +61 08 6462 7936 Project : ENAUPERT04268AA Northlink (NL) Order number : ---- C-O-C number : ---- Sampler : CHRIS JOWSEY Site : ---- Quote number : ----	Page : 1 of 5 Laboratory : Environmental Division Perth Contact : Mitchell Bevan Address : 10 Hod Way Malaga WA Australia 6090 E-mail : mitchell.bevan@alsglobal.com Telephone : 08 9209 7619 Facsimile : +61-8-9209 7600 QC Level : NEPM 2013 B3 & ALS QC Standard Date Samples Received : 21-Dec-2015 15:55 Date Analysis Commenced : 22-Dec-2015 Issue Date : 04-Jan-2016 16:06 No. of samples received : 1 No. of samples analysed : 1
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- EG035F: Poor spike recovery due to high TDS content. Confirmed by re-extraction and re-analysis.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC17	----	----	----	----
Client sampling date / time			[21-Dec-2015]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1517278-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.56	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	698	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	395	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	70	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	70	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	6	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	21	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	161	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	16	----	----	----	----
Magnesium	7439-95-4	1	mg/L	14	----	----	----	----
Sodium	7440-23-5	1	mg/L	80	----	----	----	----
Potassium	7440-09-7	1	mg/L	9	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.13	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.019	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.48	----	----	----	----
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC17	----	----	----	----
Client sampling date / time				[21-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517278-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Aluminium	7429-90-5	0.01	mg/L	1.87	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.006	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.012	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.002	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.012	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.060	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.030	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	2.34	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.0	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.15	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	6.38	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC17	----	----	----	----
Client sampling date / time				[21-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517278-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	5.66	----	----	----	----	
Ionic Balance	----	0.01	%	5.96	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	320	----	----	----	----	
Escherichia coli	----	1	CFU/100mL	320	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1517278	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04268AA Northlink (NL)	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 21-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 22-Dec-2015
Sampler	: CHRIS JOWSEY	Issue Date	: 04-Jan-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 318360)									
EP1517281-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.75	7.76	0.129	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 318357)									
EP1517274-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	752	751	0.00	0% - 20%
EP1517272-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	59800	60400	0.923	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 318872)									
EP1517000-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	596	574	3.84	0% - 20%
EP1517281-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2260	2220	1.88	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 318358)									
EP1517274-004	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	64	67	4.43	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	64	67	4.43	0% - 20%
EP1517272-007	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	127	128	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	127	128	0.00	0% - 20%
ED038A: Acidity (QC Lot: 318973)									
EP1517221-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	56	61	8.26	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 318372)									
EP1517271-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
EP1517281-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	57	57	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 318374)									
EP1517276-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	16300	16200	0.562	0% - 20%
EP1517281-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	232	231	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 321308)									
EP1517207-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	18	17	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	8	8	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	54	55	0.00	0% - 20%
EP1517275-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	175	177	1.36	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	16	16	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	54	54	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 321306)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 321306) - continued									
EP1517274-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.016	0.016	0.00	0% - 50%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.005	0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EP1517191-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.012	0.012	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 318925)									
EP1517286-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.035	0.034	0.00	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.058	0.059	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.018	0.018	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.014	0.014	0.00	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	1.10	1.10	0.660	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	18.9	18.5	2.23	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	1.96	1.99	1.61	0% - 20%		
EP1517274-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.014	0.013	0.00	0% - 50%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 318925) - continued									
EP1517274-004	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.08	0.07	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	3.51	3.52	0.327	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 321307)									
EP1517313-006	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1517191-006	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 318920)									
EP1517276-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1517283-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 318441)									
EP1517278-001	QC17	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1517285-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.28	0.29	6.41	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 318373)									
EP1517271-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1517281-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 318442)									
EP1517278-001	QC17	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.00	No Limit
EP1517285-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.13	0.13	0.00	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 318819)									
EP1517219-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.8	<0.5	42.4	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 318818)									
EP1517219-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.05	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 318375)									
EP1517278-001	QC17	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 318360)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 318357)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	99.2	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 318872)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	90.0	83	111	
				<10	293 mg/L	113	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 318358)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	95.8	76	126	
				<1	200 mg/L	90.9	90	106	
ED038A: Acidity (QCLot: 318973)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	101	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 318372)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.0	89	113	
				<1	100 mg/L	115	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 318374)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	112	84	120	
				<1	1000 mg/L	96.5	84	110	
ED093F: Dissolved Major Cations (QCLot: 321308)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	95.6	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	92.6	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	93.6	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	93.9	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 321306)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	103	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.0	84	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.6	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.2	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.7	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	100	84	112	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 321306) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.7	85	107
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.8	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.6	89	115
EG020T: Total Metals by ICP-MS (QCLot: 318925)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	94.3	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	94.1	83	107
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.8	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.7	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.4	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	92.3	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.7	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.9	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.1	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	85.5	81	103
EG035F: Dissolved Mercury by FIMS (QCLot: 321307)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.3	92	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 318920)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	87	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 318441)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	98.1	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 318373)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.1	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 318442)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.8	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 318819)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	97.3	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 318818)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	78.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 318375)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	96.0	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 318372)							
EP1517271-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	110	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 318374)							
EP1517276-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	# Not Determined	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 321306)							
EP1517207-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	100	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.0	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	101	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	101	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	103	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	102	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	108	70	130
EG020T: Total Metals by ICP-MS (QCLot: 318925)							
EP1517276-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	119	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	108	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	108	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	104	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	100	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	105	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	111	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 321307)							
EP1517264-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	89.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 318920)							
EP1517276-003	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	# 67.1	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 318441)							
EP1517278-001	QC17	EK055G: Ammonia as N	7664-41-7	1 mg/L	101	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 318373)							
EP1517271-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	108	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 318442)							
EP1517278-001	QC17	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	97.0	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 318819)							
EP1517219-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	86.8	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 318818)							
EP1517219-003	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	88.6	70	130

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 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04268AA Northlink (NL)



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 318375)							
EP1517278-001	QC17	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	97.2	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1517278	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04268AA Northlink (NL)	Date Samples Received	: 21-Dec-2015
Site	: ----	Issue Date	: 04-Jan-2016
Sampler	: CHRIS JOWSEY	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED045G: Chloride by Discrete Analyser	EP1517276--001	Anonymous	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG035T: Total Recoverable Mercury by FIMS	EP1517276--003	Anonymous	Mercury	7439-97-6	67.1 %	70-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved QC17		----	----	----	22-Dec-2015	21-Dec-2015	1

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC17	21-Dec-2015		----	----	----	22-Dec-2015	21-Dec-2015	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC17	21-Dec-2015		----	----	----	22-Dec-2015	18-Jan-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC17	21-Dec-2015		----	----	----	23-Dec-2015	28-Dec-2015	✓
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC17	21-Dec-2015		----	----	----	22-Dec-2015	04-Jan-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC17	21-Dec-2015	----	----	----	23-Dec-2015	04-Jan-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	18-Jan-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	18-Jan-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Nitric Preserved - field filtered (ED093F) QC17	21-Dec-2015	----	----	----	29-Dec-2015	18-Jan-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Miscellaneous Nitric Preserved - field filtered (EG020A-F) QC17	21-Dec-2015	----	----	----	29-Dec-2015	18-Jun-2016	✓
EG020T: Total Metals by ICP-MS							
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC17	21-Dec-2015	23-Dec-2015	18-Jun-2016	✓	29-Dec-2015	18-Jun-2016	✓
EG035F: Dissolved Mercury by FIMS							
Miscellaneous Nitric Preserved - field filtered (EG035F) QC17	21-Dec-2015	----	----	----	30-Dec-2015	18-Jan-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Miscellaneous Nitric preserved - unfiltered (EG035T) QC17	21-Dec-2015	----	----	----	23-Dec-2015	18-Jan-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	18-Jan-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	23-Dec-2015	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	18-Jan-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC17	21-Dec-2015	24-Dec-2015	18-Jan-2016	✓	29-Dec-2015	18-Jan-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC17	21-Dec-2015	24-Dec-2015	18-Jan-2016	✓	29-Dec-2015	18-Jan-2016	✓

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 Work Order : EP1517278
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04268AA Northlink (NL)



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC17	21-Dec-2015	----	----	----	22-Dec-2015	23-Dec-2015	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC17	21-Dec-2015	----	----	----	22-Dec-2015	22-Dec-2015	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)

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Work Order : EP1517278
Client : COFFEY ENVIRONMENTS PTY LTD
Project : ENAUPERT04268AA Northlink (NL)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : EP1517220 Client : COFFEY ENVIRONMENTS PTY LTD Contact : RICHELLE BUNBURY Address : SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100 E-mail : richelle.bunbury@coffey.com Telephone : +61 08 6462 7900 Facsimile : +61 08 6462 7936 Project : ENAUPERT04268AA Northlink (NL) Order number : ---- C-O-C number : ---- Sampler : CHRISTOPHER JOWSEY Site : ---- Quote number : ----	Page : 1 of 11 Laboratory : Environmental Division Perth Contact : Mitchell Bevan Address : 10 Hod Way Malaga WA Australia 6090 E-mail : mitchell.bevan@alsglobal.com Telephone : 08 9209 7619 Facsimile : +61-8-9209 7600 QC Level : NEPM 2013 B3 & ALS QC Standard Date Samples Received : 18-Dec-2015 15:00 Date Analysis Commenced : 18-Dec-2015 Issue Date : 04-Jan-2016 17:36 No. of samples received : 1 No. of samples analysed : 1
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- EG020: It is recognised that total aluminium is less than dissolved aluminium. However, the difference is within experimental variation of the methods.
- EK61G/EK067G (TKN/TP): LOR raised due to possible sample matrix interference.
- EP075: 'Sum of PAH' is the sum of the USEPA 16 priority PAHs
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC13	----	----	----	----
Client sampling date / time			[18-Dec-2015]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.78	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	712	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	506	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	87	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	87	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	44	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	155	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	75	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	50	----	----	----	----
Magnesium	7439-95-4	1	mg/L	8	----	----	----	----
Sodium	7440-23-5	1	mg/L	70	----	----	----	----
Potassium	7440-09-7	1	mg/L	14	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.27	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.002	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.10	----	----	----	----
EG020T: Total Metals by ICP-MS								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Aluminium	7429-90-5	0.01	mg/L	0.24	----	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.002	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.10	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.10	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.05	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	1.51	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	1.56	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.5	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	3.1	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	<0.05	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	7.08	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	6.56	----	----	----	----	----
Ionic Balance	----	0.01	%	3.84	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----	----
4,4'-DDT	50-29-3	2	µg/L	<2.0	----	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----	----
Methoxychlor	72-43-5	2	µg/L	<2.0	----	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----	----
Monocrotophos	6923-22-4	2	µg/L	<2.0	----	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP068B: Organophosphorus Pesticides (OP) - Continued									
Parathion-methyl	298-00-0	2	µg/L	<2.0	----	----	----	----	
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----	
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----	
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----	
Parathion	56-38-2	2	µg/L	<2.0	----	----	----	----	
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----	
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----	
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----	
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----	
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----	
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----	
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----	
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----	
EP075A: Phenolic Compounds									
Phenol	108-95-2	2	µg/L	<2	----	----	----	----	
2-Chlorophenol	95-57-8	2	µg/L	<2	----	----	----	----	
2-Methylphenol	95-48-7	2	µg/L	<2	----	----	----	----	
3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	----	----	----	----	
2-Nitrophenol	88-75-5	2	µg/L	<2	----	----	----	----	
2,4-Dimethylphenol	105-67-9	2	µg/L	<2	----	----	----	----	
2,4-Dichlorophenol	120-83-2	2	µg/L	<2	----	----	----	----	
2,6-Dichlorophenol	87-65-0	2	µg/L	<2	----	----	----	----	
4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	----	----	----	----	
2,4,6-Trichlorophenol	88-06-2	2	µg/L	<2	----	----	----	----	
2,4,5-Trichlorophenol	95-95-4	2	µg/L	<2	----	----	----	----	
Pentachlorophenol	87-86-5	4	µg/L	<4	----	----	----	----	
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	2	µg/L	<2	----	----	----	----	
2-Methylnaphthalene	91-57-6	2	µg/L	<2	----	----	----	----	
2-Chloronaphthalene	91-58-7	2	µg/L	<2	----	----	----	----	
Acenaphthylene	208-96-8	2	µg/L	<2	----	----	----	----	
Acenaphthene	83-32-9	2	µg/L	<2	----	----	----	----	
Fluorene	86-73-7	2	µg/L	<2	----	----	----	----	
Phenanthrene	85-01-8	2	µg/L	<2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	2	µg/L	<2	----	----	----	----	
Fluoranthene	206-44-0	2	µg/L	<2	----	----	----	----	
Pyrene	129-00-0	2	µg/L	<2	----	----	----	----	
N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	----	----	----	----	
Benz(a)anthracene	56-55-3	2	µg/L	<2	----	----	----	----	
Chrysene	218-01-9	2	µg/L	<2	----	----	----	----	
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	----	----	----	----	
7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	----	----	----	----	
Benzo(a)pyrene	50-32-8	2	µg/L	<2	----	----	----	----	
3-Methylcholanthrene	56-49-5	2	µg/L	<2	----	----	----	----	
Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	----	----	----	----	
Dibenz(a.h)anthracene	53-70-3	2	µg/L	<2	----	----	----	----	
Benzo(g.h.i)perylene	191-24-2	2	µg/L	<2	----	----	----	----	
^ Sum of PAHs	----	2	µg/L	<2	----	----	----	----	
^ Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----	
EP075C: Phthalate Esters									
Dimethyl phthalate	131-11-3	2	µg/L	<2	----	----	----	----	
Diethyl phthalate	84-66-2	2	µg/L	<2	----	----	----	----	
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	----	----	----	----	
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	----	----	----	----	
bis(2-ethylhexyl) phthalate	117-81-7	10	µg/L	<10	----	----	----	----	
Di-n-octylphthalate	117-84-0	2	µg/L	<2	----	----	----	----	
EP075D: Nitrosamines									
N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	----	----	----	----	
N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	----	----	----	----	
N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	----	----	----	----	
N-Nitrosomorpholine	59-89-2	2	µg/L	<2	----	----	----	----	
N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	----	----	----	----	
N-Nitrosopiperidine	100-75-4	2	µg/L	<2	----	----	----	----	
N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	----	----	----	----	
N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	----	----	----	----	
Methapyrilene	91-80-5	2	µg/L	<2	----	----	----	----	
EP075E: Nitroaromatics and Ketones									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP075E: Nitroaromatics and Ketones - Continued									
2-Picoline	109-06-8	2	µg/L	<2	----	----	----	----	
Acetophenone	98-86-2	2	µg/L	<2	----	----	----	----	
Nitrobenzene	98-95-3	2	µg/L	<2	----	----	----	----	
Isophorone	78-59-1	2	µg/L	<2	----	----	----	----	
2,6-Dinitrotoluene	606-20-2	4	µg/L	<4	----	----	----	----	
2,4-Dinitrotoluene	121-14-2	4	µg/L	<4	----	----	----	----	
1-Naphthylamine	134-32-7	2	µg/L	<2	----	----	----	----	
4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	----	----	----	----	
5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	----	----	----	----	
Azobenzene	103-33-3	2	µg/L	<2	----	----	----	----	
1,3,5-Trinitrobenzene	99-35-4	2	µg/L	<2	----	----	----	----	
Phenacetin	62-44-2	2	µg/L	<2	----	----	----	----	
4-Aminobiphenyl	92-67-1	2	µg/L	<2	----	----	----	----	
Pentachloronitrobenzene	82-68-8	2	µg/L	<2	----	----	----	----	
Pronamide	23950-58-5	2	µg/L	<2	----	----	----	----	
Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	----	----	----	----	
Chlorobenzilate	510-15-6	2	µg/L	<2	----	----	----	----	
EP075F: Haloethers									
Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	----	----	----	----	
Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	----	----	----	----	
4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	----	----	----	----	
4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	----	----	----	----	
EP075G: Chlorinated Hydrocarbons									
1,3-Dichlorobenzene	541-73-1	2	µg/L	<2	----	----	----	----	
1,4-Dichlorobenzene	106-46-7	2	µg/L	<2	----	----	----	----	
1,2-Dichlorobenzene	95-50-1	2	µg/L	<2	----	----	----	----	
Hexachloroethane	67-72-1	2	µg/L	<2	----	----	----	----	
1,2,4-Trichlorobenzene	120-82-1	2	µg/L	<2	----	----	----	----	
Hexachloropropylene	1888-71-7	2	µg/L	<2	----	----	----	----	
Hexachlorobutadiene	87-68-3	2	µg/L	<2	----	----	----	----	
Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	----	----	----	----	
Pentachlorobenzene	608-93-5	2	µg/L	<2	----	----	----	----	
Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	----	----	----	----	
EP075H: Anilines and Benzidines									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP075H: Anilines and Benzidines - Continued									
Aniline	62-53-3	2	µg/L	<2	----	----	----	----	
4-Chloroaniline	106-47-8	2	µg/L	<2	----	----	----	----	
2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----	
3-Nitroaniline	99-09-2	4	µg/L	<4	----	----	----	----	
Dibenzofuran	132-64-9	2	µg/L	<2	----	----	----	----	
4-Nitroaniline	100-01-6	2	µg/L	<2	----	----	----	----	
Carbazole	86-74-8	2	µg/L	<2	----	----	----	----	
3,3'-Dichlorobenzidine	91-94-1	2	µg/L	<2	----	----	----	----	
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	2	µg/L	<2	----	----	----	----	
beta-BHC	319-85-7	2	µg/L	<2	----	----	----	----	
gamma-BHC	58-89-9	2	µg/L	<2	----	----	----	----	
delta-BHC	319-86-8	2	µg/L	<2	----	----	----	----	
Heptachlor	76-44-8	2	µg/L	<2	----	----	----	----	
Aldrin	309-00-2	2	µg/L	<2	----	----	----	----	
Heptachlor epoxide	1024-57-3	2	µg/L	<2	----	----	----	----	
alpha-Endosulfan	959-98-8	2	µg/L	<2	----	----	----	----	
4,4'-DDE	72-55-9	2	µg/L	<2	----	----	----	----	
Dieldrin	60-57-1	2	µg/L	<2	----	----	----	----	
Endrin	72-20-8	2	µg/L	<2	----	----	----	----	
beta-Endosulfan	33213-65-9	2	µg/L	<2	----	----	----	----	
4,4'-DDD	72-54-8	2	µg/L	<2	----	----	----	----	
Endosulfan sulfate	1031-07-8	2	µg/L	<2	----	----	----	----	
4,4'-DDT	50-29-3	4	µg/L	<4	----	----	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	4	µg/L	<4	----	----	----	----	
EP075J: Organophosphorus Pesticides									
Dichlorvos	62-73-7	2	µg/L	<2	----	----	----	----	
Dimethoate	60-51-5	2	µg/L	<2	----	----	----	----	
Diazinon	333-41-5	2	µg/L	<2	----	----	----	----	
Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	----	----	----	----	
Malathion	121-75-5	2	µg/L	<2	----	----	----	----	
Fenthion	55-38-9	2	µg/L	<2	----	----	----	----	
Chlorpyrifos	2921-88-2	2	µg/L	<2	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP075J: Organophosphorus Pesticides - Continued									
Pirimphos-ethyl	23505-41-1	2	µg/L	<2	----	----	----	----	
Chlorfenvinphos	470-90-6	2	µg/L	<2	----	----	----	----	
Prothiofos	34643-46-4	2	µg/L	<2	----	----	----	----	
Ethion	563-12-2	2	µg/L	<2	----	----	----	----	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----	
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----	
C15 - C28 Fraction	----	100	µg/L	160	----	----	----	----	
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----	
^ C10 - C36 Fraction (sum)	----	50	µg/L	160	----	----	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----	
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----	
>C16 - C34 Fraction	----	100	µg/L	160	----	----	----	----	
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	160	----	----	----	----	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	----	----	----	----	
Toluene	108-88-3	2	µg/L	<2	----	----	----	----	
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----	
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----	
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----	
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----	
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%	82.5	----	----	----	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%	84.3	----	----	----	----	
EP075S: Acid Extractable Surrogates									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC13	----	----	----	----
Client sampling date / time				[18-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517220-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EP075S: Acid Extractable Surrogates - Continued									
2-Fluorophenol	367-12-4	2	%	44.5	----	----	----	----	
Phenol-d6	13127-88-3	2	%	25.0	----	----	----	----	
2-Chlorophenol-D4	93951-73-6	2	%	71.3	----	----	----	----	
2,4,6-Tribromophenol	118-79-6	2	%	89.8	----	----	----	----	
EP075T: Base/Neutral Extractable Surrogates									
Nitrobenzene-D5	4165-60-0	2	%	79.0	----	----	----	----	
1,2-Dichlorobenzene-D4	2199-69-1	2	%	67.9	----	----	----	----	
2-Fluorobiphenyl	321-60-8	2	%	69.1	----	----	----	----	
Anthracene-d10	1719-06-8	2	%	93.1	----	----	----	----	
4-Terphenyl-d14	1718-51-0	2	%	96.1	----	----	----	----	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	96.3	----	----	----	----	
Toluene-D8	2037-26-5	2	%	104	----	----	----	----	
4-Bromofluorobenzene	460-00-4	2	%	92.7	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1517220	Page	: 1 of 14
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04268AA Northlink (NL)	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 18-Dec-2015
Sampler	: CHRISTOPHER JOWSEY	Issue Date	: 04-Jan-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 316984)									
EP1517217-013	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.57	7.58	0.132	0% - 20%
EP1517221-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.81	5.79	0.345	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 316985)									
EP1517217-013	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	12600	12600	0.240	0% - 20%
EP1517221-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2240	2200	1.81	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 316295)									
EP1517206-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	760	776	2.08	0% - 20%
EP1517220-001	QC13	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	506	492	2.80	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 316983)									
EP1517217-013	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	293	290	0.799	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	293	290	0.799	0% - 20%
EP1517217-006	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	331	331	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	331	331	0.00	0% - 20%
ED038A: Acidity (QC Lot: 318972)									
EP1517140-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	10	10	0.00	No Limit
EP1517203-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	4	4	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 315457)									
EP1517220-001	QC13	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	155	172	10.3	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 315456)									
EP1517220-001	QC13	ED045G: Chloride	16887-00-6	1	mg/L	75	75	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 317504)									
EP1517203-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	131	148	12.2	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	210	216	3.17	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	17	16	7.14	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	1600	1600	0.562	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 317503)									
EP1517221-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.036	0.035	0.00	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 317503) - continued									
EP1517221-001	Anonymous	EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.323	0.327	1.11	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.020	0.020	0.00	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.402	0.411	2.35	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.14	0.15	0.00	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	3.15	3.13	0.608	0% - 20%
EP1517203-007	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0003	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	2.72	2.73	0.342	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.018	0.019	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.075	0.074	0.00	0% - 50%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.08	0.07	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 316278)									
EP1517214-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.010	0.010	0.00	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.062	0.057	8.81	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.029	0.027	8.85	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.036	0.034	4.63	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.089	0.086	3.68	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.012	0.010	14.9	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.033	0.029	11.6	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	17.8	16.1	10.1	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	19.3	17.5	9.82	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 317502)									
EP1517203-007	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 316273)									
EP1517189-021	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 315482)									
EP1517219-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.58	0.54	5.72	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 315455)									
EP1517220-001	QC13	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.05	0.05	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 315483)									

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 Work Order : EP1517220
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04268AA Northlink (NL)



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 315483) - continued									
EP1517219-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 317432)									
EP1517182-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP1517206-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.3	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 317431)									
EP1517182-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1517206-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.12	0.16	24.4	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 315454)									
EP1517220-001	QC13	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 315612)									
EP1517222-012	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP1517222-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 315612)									
EP1517222-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP1517222-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 315612)									
EP1517222-012	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP1517222-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 316984)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 316985)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	103	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 316295)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.2	83	111	
				<10	293 mg/L	118	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 316983)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	100	76	126	
				<1	200 mg/L	93.7	90	106	
ED038A: Acidity (QCLot: 318972)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	106	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 315457)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	106	89	113	
				<1	100 mg/L	99.6	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 315456)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	84	120	
				<1	1000 mg/L	102	84	110	
ED093F: Dissolved Major Cations (QCLot: 317504)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.3	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	90.4	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.2	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.6	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 317503)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	107	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.5	84	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	105	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	105	84	112	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 317503) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	100	85	107
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	108	89	115
EG020T: Total Metals by ICP-MS (QCLot: 316278)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	97.4	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	90.8	83	107
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.8	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.9	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.4	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.2	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.7	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.0	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	92.0	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	87.4	81	103
EG035F: Dissolved Mercury by FIMS (QCLot: 317502)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.9	92	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 316273)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	87	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 315482)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	106	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 315455)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.5	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 315483)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	106	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 317432)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	99.6	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 317431)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	80.5	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 315454)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.6	87	115
EP068A: Organochlorine Pesticides (OC) (QCLot: 316309)								
EP068: 4.4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	94.0	39	117
EP068: 4.4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	94.1	40	116
EP068: 4.4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	98.8	26	106



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP068A: Organochlorine Pesticides (OC) (QCLot: 316309) - continued									
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	83.7	40	110	
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	84.5	40	104	
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	86.2	36	124	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	87.2	39	109	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	97.7	40	122	
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	93.2	40	112	
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	87.0	42	110	
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	90.8	39	119	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	82.6	40	106	
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	84.7	35	119	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	96.0	39	105	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	96.4	36	108	
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	86.2	42	112	
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	81.2	39	105	
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	91.1	40	112	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	77.1	37	99	
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	92.0	26	104	
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	90.9	41	111	
EP068B: Organophosphorus Pesticides (OP) (QCLot: 316309)									
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	25.5	19	133	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	87.7	36	112	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	88.8	39	111	
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	91.0	39	115	
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	90.3	44	112	
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	85.0	43	111	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	85.0	35	105	
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	90.7	43	111	
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	77.2	38	102	
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	65.3	33	93	
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	86.4	38	116	
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	64.0	33	107	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	86.8	42	110	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	83.6	38	110	
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	3.73	2	20	
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	77.3	37	107	
EP068: Parathion-methyl	298-00-0	----	µg/L	----	5 µg/L	66.5	32	100	
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	91.0	37	117	
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	88.1	37	119	
EP075A: Phenolic Compounds (QCLot: 316310)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EP075A: Phenolic Compounds (QCLot: 316310) - continued									
EP075: 2.4.5-Trichlorophenol	95-95-4	2	µg/L	<2	----	----	----	----	----
EP075: 2.4.6-Trichlorophenol	88-06-2	2	µg/L	<2	10 µg/L	73.4	20	112	
EP075: 2.4-Dichlorophenol	120-83-2	2	µg/L	<2	10 µg/L	36.2	17	109	
EP075: 2.4-Dimethylphenol	105-67-9	2	µg/L	<2	10 µg/L	51.6	24	108	
EP075: 2.6-Dichlorophenol	87-65-0	2	µg/L	<2	10 µg/L	78.6	28	102	
EP075: 2-Chlorophenol	95-57-8	2	µg/L	<2	10 µg/L	79.6	31	95	
EP075: 2-Methylphenol	95-48-7	2	µg/L	<2	10 µg/L	71.3	29	87	
EP075: 2-Nitrophenol	88-75-5	2	µg/L	<2	10 µg/L	78.9	24	102	
EP075: 3- & 4-Methylphenol	1319-77-3	4	µg/L	<4	10 µg/L	51.1	20	92	
EP075: 4-Chloro-3-methylphenol	59-50-7	2	µg/L	<2	10 µg/L	66.6	21	111	
EP075: Pentachlorophenol	87-86-5	4	µg/L	<4	10 µg/L	43.6	9	95	
EP075: Phenol	108-95-2	2	µg/L	<2	10 µg/L	35.3	15	51	
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 316310)									
EP075: 2-Chloronaphthalene	91-58-7	2	µg/L	<2	10 µg/L	78.0	31	101	
EP075: 2-Methylnaphthalene	91-57-6	2	µg/L	<2	10 µg/L	75.8	31	99	
EP075: 3-Methylcholanthrene	56-49-5	2	µg/L	<2	10 µg/L	89.3	39	111	
EP075: 7.12-Dimethylbenz(a)anthracene	57-97-6	2	µg/L	<2	10 µg/L	87.0	7	183	
EP075: Acenaphthene	83-32-9	2	µg/L	<2	10 µg/L	84.7	40	100	
EP075: Acenaphthylene	208-96-8	2	µg/L	<2	10 µg/L	80.0	31	111	
EP075: Anthracene	120-12-7	2	µg/L	<2	10 µg/L	102	41	109	
EP075: Benz(a)anthracene	56-55-3	2	µg/L	<2	10 µg/L	111	36	126	
EP075: Benzo(a)pyrene	50-32-8	2	µg/L	<2	10 µg/L	95.8	42	106	
EP075: Benzo(a)pyrene TEQ (zero)	----	2	µg/L	<2	----	----	----	----	----
EP075: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	4	µg/L	<4	20 µg/L	49.5	24	124	
EP075: Benzo(g,h,i)perylene	191-24-2	2	µg/L	<2	10 µg/L	86.4	40	116	
EP075: Chrysene	218-01-9	2	µg/L	<2	10 µg/L	109	30	138	
EP075: Dibenz(a,h)anthracene	53-70-3	2	µg/L	<2	10 µg/L	91.7	32	122	
EP075: Fluoranthene	206-44-0	2	µg/L	<2	10 µg/L	109	35	123	
EP075: Fluorene	86-73-7	2	µg/L	<2	10 µg/L	88.2	35	105	
EP075: Indeno(1.2.3.cd)pyrene	193-39-5	2	µg/L	<2	10 µg/L	90.7	40	114	
EP075: N-2-Fluorenyl Acetamide	53-96-3	2	µg/L	<2	10 µg/L	72.9	28	120	
EP075: Naphthalene	91-20-3	2	µg/L	<2	10 µg/L	76.2	32	96	
EP075: Phenanthrene	85-01-8	2	µg/L	<2	10 µg/L	102	43	105	
EP075: Pyrene	129-00-0	2	µg/L	<2	10 µg/L	109	35	129	
EP075C: Phthalate Esters (QCLot: 316310)									
EP075: bis(2-ethylhexyl) phthalate	117-81-7	----	µg/L	----	10 µg/L	101	36	130	
EP075: Butyl benzyl phthalate	85-68-7	2	µg/L	<2	10 µg/L	109	36	124	
EP075: Diethyl phthalate	84-66-2	2	µg/L	<2	10 µg/L	98.8	42	112	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075C: Phthalate Esters (QCLot: 316310) - continued									
EP075: Dimethyl phthalate	131-11-3	2	µg/L	<2	10 µg/L	83.3	27	121	
EP075: Di-n-butyl phthalate	84-74-2	2	µg/L	<2	10 µg/L	114	44	122	
EP075: Di-n-octylphthalate	117-84-0	2	µg/L	<2	10 µg/L	92.9	43	109	
EP075D: Nitrosamines (QCLot: 316310)									
EP075: Methapyrilene	91-80-5	2	µg/L	<2	10 µg/L	42.1	29	115	
EP075: N-Nitrosodibutylamine	924-16-3	2	µg/L	<2	10 µg/L	82.0	37	103	
EP075: N-Nitrosodiethylamine	55-18-5	2	µg/L	<2	10 µg/L	84.4	24	102	
EP075: N-Nitrosodi-n-propylamine	621-64-7	2	µg/L	<2	10 µg/L	91.6	33	107	
EP075: N-Nitrosodiphenyl & Diphenylamine	86-30-6 122-39-4	4	µg/L	<4	10 µg/L	95.2	37	107	
EP075: N-Nitrosomethylethylamine	10595-95-6	2	µg/L	<2	10 µg/L	67.9	13	103	
EP075: N-Nitrosomorpholine	59-89-2	2	µg/L	<2	10 µg/L	59.5	18	82	
EP075: N-Nitrosopiperidine	100-75-4	2	µg/L	<2	10 µg/L	84.7	31	105	
EP075: N-Nitrosopyrrolidine	930-55-2	4	µg/L	<4	10 µg/L	58.8	22	80	
EP075E: Nitroaromatics and Ketones (QCLot: 316310)									
EP075: 1,3,5-Trinitrobenzene	99-35-4	2	µg/L	<2	10 µg/L	53.8	16	90	
EP075: 1-Naphthylamine	134-32-7	2	µg/L	<2	10 µg/L	85.0	17	159	
EP075: 2,4-Dinitrotoluene	121-14-2	4	µg/L	<4	10 µg/L	86.6	36	94	
EP075: 2,6-Dinitrotoluene	606-20-2	4	µg/L	<4	10 µg/L	82.2	23	117	
EP075: 2-Picoline	109-06-8	2	µg/L	<2	10 µg/L	65.4	15	87	
EP075: 4-Aminobiphenyl	92-67-1	2	µg/L	<2	10 µg/L	95.2	38	108	
EP075: 4-Nitroquinoline-N-oxide	56-57-5	2	µg/L	<2	10 µg/L	116	36	160	
EP075: 5-Nitro-o-toluidine	99-55-8	2	µg/L	<2	10 µg/L	84.4	30	106	
EP075: Acetophenone	98-86-2	2	µg/L	<2	10 µg/L	92.5	31	107	
EP075: Azobenzene	103-33-3	2	µg/L	<2	10 µg/L	90.3	34	106	
EP075: Chlorobenzilate	510-15-6	2	µg/L	<2	10 µg/L	104	37	127	
EP075: Dimethylaminoazobenzene	60-11-7	2	µg/L	<2	10 µg/L	90.7	26	104	
EP075: Isophorone	78-59-1	2	µg/L	<2	10 µg/L	84.7	30	108	
EP075: Nitrobenzene	98-95-3	2	µg/L	<2	10 µg/L	85.7	30	104	
EP075: Pentachloronitrobenzene	82-68-8	2	µg/L	<2	10 µg/L	89.5	37	105	
EP075: Phenacetin	62-44-2	2	µg/L	<2	10 µg/L	77.2	36	94	
EP075: Pronamide	23950-58-5	2	µg/L	<2	10 µg/L	106	41	113	
EP075F: Haloethers (QCLot: 316310)									
EP075: 4-Bromophenyl phenyl ether	101-55-3	2	µg/L	<2	10 µg/L	86.4	34	108	
EP075: 4-Chlorophenyl phenyl ether	7005-72-3	2	µg/L	<2	10 µg/L	86.2	30	110	
EP075: Bis(2-chloroethoxy) methane	111-91-1	2	µg/L	<2	10 µg/L	87.1	32	108	
EP075: Bis(2-chloroethyl) ether	111-44-4	2	µg/L	<2	10 µg/L	83.7	25	107	
EP075G: Chlorinated Hydrocarbons (QCLot: 316310)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP075G: Chlorinated Hydrocarbons (QCLot: 316310) - continued									
EP075: 1,2,4-Trichlorobenzene	120-82-1	2	µg/L	<2	10 µg/L	68.8	23	95	
EP075: 1,2-Dichlorobenzene	95-50-1	2	µg/L	<2	10 µg/L	69.5	25	93	
EP075: 1,3-Dichlorobenzene	541-73-1	2	µg/L	<2	10 µg/L	68.2	23	93	
EP075: 1,4-Dichlorobenzene	106-46-7	2	µg/L	<2	10 µg/L	69.4	23	91	
EP075: Hexachlorobenzene (HCB)	118-74-1	4	µg/L	<4	10 µg/L	89.9	35	103	
EP075: Hexachlorobutadiene	87-68-3	2	µg/L	<2	10 µg/L	63.3	20	94	
EP075: Hexachlorocyclopentadiene	77-47-4	10	µg/L	<10	10 µg/L	43.2	17	88	
EP075: Hexachloroethane	67-72-1	2	µg/L	<2	10 µg/L	63.0	21	91	
EP075: Hexachloropropylene	1888-71-7	2	µg/L	<2	10 µg/L	42.9	12	88	
EP075: Pentachlorobenzene	608-93-5	2	µg/L	<2	10 µg/L	75.6	36	96	
EP075H: Anilines and Benzidines (QCLot: 316310)									
EP075: 2-Nitroaniline	88-74-4	4	µg/L	<4	----	----	----	----	
EP075: 3,3'-Dichlorobenzidine	91-94-1	2	µg/L	<2	10 µg/L	108	26	136	
EP075: 3-Nitroaniline	99-09-2	4	µg/L	<4	10 µg/L	112	12	134	
EP075: 4-Chloroaniline	106-47-8	2	µg/L	<2	10 µg/L	54.2	4	96	
EP075: 4-Nitroaniline	100-01-6	2	µg/L	<2	10 µg/L	84.4	26	114	
EP075: Aniline	62-53-3	2	µg/L	<2	10 µg/L	77.3	15	101	
EP075: Carbazole	86-74-8	2	µg/L	<2	10 µg/L	105	39	111	
EP075: Dibenzofuran	132-64-9	2	µg/L	<2	10 µg/L	84.9	37	101	
EP075I: Organochlorine Pesticides (QCLot: 316310)									
EP075: 4,4'-DDD	72-54-8	2	µg/L	<2	10 µg/L	117	35	129	
EP075: 4,4'-DDE	72-55-9	2	µg/L	<2	10 µg/L	108	35	127	
EP075: 4,4'-DDT	50-29-3	4	µg/L	<4	10 µg/L	65.7	19	125	
EP075: Aldrin	309-00-2	2	µg/L	<2	10 µg/L	105	37	125	
EP075: alpha-BHC	319-84-6	2	µg/L	<2	10 µg/L	99.9	32	122	
EP075: alpha-Endosulfan	959-98-8	2	µg/L	<2	----	----	----	----	
EP075: beta-BHC	319-85-7	2	µg/L	<2	----	----	----	----	
EP075: beta-Endosulfan	33213-65-9	2	µg/L	<2	----	----	----	----	
EP075: delta-BHC	319-86-8	2	µg/L	<2	10 µg/L	105	36	118	
EP075: Dieldrin	60-57-1	2	µg/L	<2	10 µg/L	110	38	126	
EP075: Endosulfan sulfate	1031-07-8	2	µg/L	<2	10 µg/L	94.4	30	136	
EP075: Endrin	72-20-8	2	µg/L	<2	10 µg/L	82.7	28	128	
EP075: gamma-BHC	58-89-9	2	µg/L	<2	----	----	----	----	
EP075: Heptachlor	76-44-8	2	µg/L	<2	10 µg/L	91.3	31	113	
EP075: Heptachlor epoxide	1024-57-3	2	µg/L	<2	10 µg/L	106	33	125	
EP075: Sum of Aldrin + Dieldrin	309-00-2/60-57-1	4	µg/L	<4	----	----	----	----	
EP075: Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	4	µg/L	<4	----	----	----	----	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
EP075J: Organophosphorus Pesticides (QCLot: 316310)								
EP075: Chlorfenvinphos	470-90-6	2	µg/L	<2	----	----	----	----
EP075: Chlorpyrifos	2921-88-2	2	µg/L	<2	10 µg/L	105	39	119
EP075: Chlorpyrifos-methyl	5598-13-0	2	µg/L	<2	----	----	----	----
EP075: Diazinon	333-41-5	2	µg/L	<2	10 µg/L	107	42	118
EP075: Dichlorvos	62-73-7	2	µg/L	<2	10 µg/L	70.0	33	103
EP075: Dimethoate	60-51-5	2	µg/L	<2	10 µg/L	66.3	26	102
EP075: Ethion	563-12-2	2	µg/L	<2	10 µg/L	101	34	126
EP075: Fenthion	55-38-9	2	µg/L	<2	----	----	----	----
EP075: Malathion	121-75-5	2	µg/L	<2	----	----	----	----
EP075: Pirimphos-ethyl	23505-41-1	2	µg/L	<2	10 µg/L	109	37	123
EP075: Prothiofos	34643-46-4	2	µg/L	<2	10 µg/L	109	31	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 315612)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	97.7	69	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 316308)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	62.9	29	109
EP071: C15 - C28 Fraction	----	100	µg/L	<100	400 µg/L	69.3	36	124
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	74.5	35	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 315612)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	370 µg/L	97.7	72	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 316308)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	400 µg/L	64.3	34	112
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	600 µg/L	72.6	38	124
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	200 µg/L	75.0	18	136
EP080: BTEXN (QCLot: 315612)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.6	78	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	103	78	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	101	78	122
	106-42-3							
EP080: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	89.7	71	125
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100	81	119
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.6	78	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 315457)							
EP1517220-001	QC13	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	83.0	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 315456)							
EP1517220-001	QC13	ED045G: Chloride	16887-00-6	1000 mg/L	104	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 317503)							
EP1517203-008	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	103	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	104	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	104	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	94.3	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	96.0	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	100	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.1	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	105	70	130
EG020T: Total Metals by ICP-MS (QCLot: 316278)							
EP1517220-001	QC13	EG020A-T: Arsenic	7440-38-2	1 mg/L	107	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	107	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.5	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	98.1	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	101	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	99.1	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	108	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 317502)							
EP1517220-001	QC13	EG035F: Mercury	7439-97-6	0.01 mg/L	96.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 316273)							
EP1517195-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	99.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 315482)							
EP1517219-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	116	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 315455)							
EP1517220-001	QC13	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 315483)							
EP1517219-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	101	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 317432)							
EP1517182-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.5	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 317431)							
EP1517182-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	87.0	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EPK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 315454)							
EP1517220-001	QC13	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	98.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 315612)							
EP1517222-001	Anonymous	EP080: C6 - C9 Fraction	----	240 µg/L	86.5	77	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 316308)							
EP1517192-002	Anonymous	EP071: C10 - C14 Fraction	----	400 µg/L	62.2	45	122
		EP071: C15 - C28 Fraction	----	400 µg/L	63.8	55	143
		EP071: C29 - C36 Fraction	----	400 µg/L	72.1	54	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 315612)							
EP1517222-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	290 µg/L	86.1	77	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 316308)							
EP1517192-002	Anonymous	EP071: >C10 - C16 Fraction	----	400 µg/L	63.3	45	122
		EP071: >C16 - C34 Fraction	----	600 µg/L	68.2	55	143
		EP071: >C34 - C40 Fraction	----	200 µg/L	71.1	54	128
EP080: BTEXN (QCLot: 315612)							
EP1517222-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	89.4	77	122
		EP080: Toluene	108-88-3	20 µg/L	94.9	74	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1517220	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04268AA Northlink (NL)	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 04-Jan-2016
Sampler	: CHRISTOPHER JOWSEY	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC13	----	----	----	21-Dec-2015	18-Dec-2015	3

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Pesticides by GCMS	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	9	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Pesticides by GCMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC13	18-Dec-2015	----	----	----	21-Dec-2015	18-Dec-2015	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC13	18-Dec-2015	----	----	----	21-Dec-2015	15-Jan-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Glass Bottle - unpreserved (EA015H) QC13	18-Dec-2015	----	----	----	21-Dec-2015	25-Dec-2015	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC13	18-Dec-2015	----	----	----	21-Dec-2015	01-Jan-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED038A: Acidity							
Miscellaneous Glass Bottle - unpreserved (ED038) QC13	18-Dec-2015	----	----	----	23-Dec-2015	01-Jan-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	15-Jan-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	15-Jan-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC13	18-Dec-2015	----	----	----	23-Dec-2015	15-Jan-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC13	18-Dec-2015	----	----	----	29-Dec-2015	15-Jun-2016	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) QC13	18-Dec-2015	22-Dec-2015	15-Jun-2016	✓	24-Dec-2015	15-Jun-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC13	18-Dec-2015	----	----	----	23-Dec-2015	15-Jan-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) QC13	18-Dec-2015	----	----	----	22-Dec-2015	15-Jan-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	15-Jan-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	20-Dec-2015	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	15-Jan-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC13	18-Dec-2015	23-Dec-2015	15-Jan-2016	✓	30-Dec-2015	15-Jan-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC13	18-Dec-2015	23-Dec-2015	15-Jan-2016	✓	30-Dec-2015	15-Jan-2016	✓

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 Work Order : EP1517220
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04268AA Northlink (NL)



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC13	18-Dec-2015	----	----	----	18-Dec-2015	20-Dec-2015	✓
EP068A: Organochlorine Pesticides (OC)							
Miscellaneous Glass Bottle - unpreserved (EP068) QC13	18-Dec-2015	22-Dec-2015	25-Dec-2015	✓	22-Dec-2015	31-Jan-2016	✓
EP080/071: Total Petroleum Hydrocarbons							
Miscellaneous Glass Bottle - unpreserved (EP071) QC13	18-Dec-2015	22-Dec-2015	25-Dec-2015	✓	22-Dec-2015	31-Jan-2016	✓
EP075A: Phenolic Compounds							
Miscellaneous Glass Bottle - unpreserved (EP075) QC13	18-Dec-2015	22-Dec-2015	25-Dec-2015	✓	22-Dec-2015	31-Jan-2016	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080) QC13	18-Dec-2015	21-Dec-2015	01-Jan-2016	✓	21-Dec-2015	01-Jan-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	9	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	2	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds	EP075	0	1	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TRH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Semivolatile Organic Compounds	EP075	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NORTHLINK (NL)**
Project ID: **ENAUPERT04268AA**
COC number: **04268AA**
Turn around time: **5 Day**
Date/Time received: **Dec 21, 2015 8:09 AM**
Eurofins | mgt reference: **484221**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **484221-W**
Project name NORTHLINK (NL)
Project ID ENAUPERT04268AA
Received Date Dec 21, 2015

Client Sample ID			QC11 Water M15-De21316 Dec 18, 2015	QC12 Water M15-De21317 Dec 18, 2015	QC10 Water M15-De21318 Dec 18, 2015	NLBH05 Water M15-De21319 Dec 18, 2015
Sample Matrix	LOR	Unit				
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-	-
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	100	102	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	-	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	-	< 0.001	-	-
4,4'-DDD	0.0001	mg/L	-	< 0.0001	-	-
4,4'-DDE	0.0001	mg/L	-	< 0.0001	-	-
4,4'-DDT	0.0001	mg/L	-	< 0.0001	-	-
a-BHC	0.0001	mg/L	-	< 0.0001	-	-
Aldrin	0.0001	mg/L	-	< 0.0001	-	-
b-BHC	0.0001	mg/L	-	< 0.0001	-	-
d-BHC	0.0001	mg/L	-	< 0.0001	-	-
Dieldrin	0.0001	mg/L	-	< 0.0001	-	-
Endosulfan I	0.0001	mg/L	-	< 0.0001	-	-
Endosulfan II	0.0001	mg/L	-	< 0.0001	-	-
Endosulfan sulphate	0.0001	mg/L	-	< 0.0001	-	-
Endrin	0.0001	mg/L	-	< 0.0001	-	-
Endrin aldehyde	0.0001	mg/L	-	< 0.0001	-	-
Endrin ketone	0.0001	mg/L	-	< 0.0001	-	-
g-BHC (Lindane)	0.0001	mg/L	-	< 0.0001	-	-

Client Sample ID			QC11	QC12	QC10	NLBH05
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De21316	M15-De21317	M15-De21318	M15-De21319
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor	0.0001	mg/L	-	< 0.0001	-	-
Heptachlor epoxide	0.0001	mg/L	-	< 0.0001	-	-
Hexachlorobenzene	0.0001	mg/L	-	< 0.0001	-	-
Methoxychlor	0.0001	mg/L	-	< 0.0001	-	-
Toxaphene	0.01	mg/L	-	< 0.01	-	-
Dibutylchloroendate (surr.)	1	%	-	71	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	85	-	-
Organophosphorous Pesticides						
Bolstar	0.002	mg/L	-	< 0.002	-	-
Chlorpyrifos	0.002	mg/L	-	< 0.002	-	-
Demeton-O	0.002	mg/L	-	< 0.002	-	-
Diazinon	0.002	mg/L	-	< 0.002	-	-
Dichlorvos	0.002	mg/L	-	< 0.002	-	-
Disulfoton	0.002	mg/L	-	< 0.002	-	-
Ethion	0.002	mg/L	-	< 0.002	-	-
Ethoprop	0.002	mg/L	-	< 0.002	-	-
Fenitrothion	0.002	mg/L	-	< 0.002	-	-
Fensulfothion	0.002	mg/L	-	< 0.002	-	-
Fenthion	0.002	mg/L	-	< 0.002	-	-
Merphos	0.002	mg/L	-	< 0.002	-	-
Methyl azinphos	0.002	mg/L	-	< 0.002	-	-
Methyl parathion	0.002	mg/L	-	< 0.002	-	-
Mevinphos	0.002	mg/L	-	< 0.002	-	-
Naled	0.002	mg/L	-	< 0.002	-	-
Phorate	0.002	mg/L	-	< 0.002	-	-
Ronnel	0.002	mg/L	-	< 0.002	-	-
Tokuthion	0.002	mg/L	-	< 0.002	-	-
Trichloronate	0.002	mg/L	-	< 0.002	-	-
Triphenylphosphate (surr.)	1	%	-	85	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	-	< 0.03	-	-
1-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
1-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
1,2-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3,5-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,4-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
2-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
2-Chlorophenol	0.003	mg/L	-	< 0.003	-	-
2-Methylnaphthalene	0.005	mg/L	-	< 0.005	-	-

Client Sample ID			QC11 Water M15-De21316 Dec 18, 2015	QC12 Water M15-De21317 Dec 18, 2015	QC10 Water M15-De21318 Dec 18, 2015	NLBH05 Water M15-De21319 Dec 18, 2015
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Semivolatile Organics						
2-Methylphenol (o-Cresol)	0.003	mg/L	-	< 0.003	-	-
2-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
2-Nitroaniline	0.005	mg/L	-	< 0.005	-	-
2-Nitrophenol	0.01	mg/L	-	< 0.01	-	-
2-Picoline	0.005	mg/L	-	< 0.005	-	-
2.3.4.6-Tetrachlorophenol	0.01	mg/L	-	< 0.01	-	-
2.4-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2.4-Dimethylphenol	0.003	mg/L	-	< 0.003	-	-
2.4-Dinitrophenol	0.03	mg/L	-	< 0.03	-	-
2.4-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
2.4.5-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2.4.6-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2.6-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2.6-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	-	< 0.006	-	-
3-Methylcholanthrene	0.005	mg/L	-	< 0.005	-	-
3.3'-Dichlorobenzidine	0.005	mg/L	-	< 0.005	-	-
4-Aminobiphenyl	0.005	mg/L	-	< 0.005	-	-
4-Bromophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Chloro-3-methylphenol	0.01	mg/L	-	< 0.01	-	-
4-Chlorophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Nitrophenol	0.03	mg/L	-	< 0.03	-	-
4.4'-DDD	0.005	mg/L	-	< 0.005	-	-
4.4'-DDE	0.005	mg/L	-	< 0.005	-	-
4.4'-DDT	0.005	mg/L	-	< 0.005	-	-
7.12-Dimethylbenz(a)anthracene	0.005	mg/L	-	< 0.005	-	-
a-BHC	0.005	mg/L	-	< 0.005	-	-
Acenaphthene	0.001	mg/L	-	< 0.001	-	-
Acenaphthylene	0.001	mg/L	-	< 0.001	-	-
Acetophenone	0.005	mg/L	-	< 0.005	-	-
Aldrin	0.005	mg/L	-	< 0.005	-	-
Aniline	0.005	mg/L	-	< 0.005	-	-
Anthracene	0.001	mg/L	-	< 0.001	-	-
b-BHC	0.005	mg/L	-	< 0.005	-	-
Benz(a)anthracene	0.001	mg/L	-	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	-	< 0.001	-	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	-	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	-	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	-	< 0.001	-	-
Benzyl chloride	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroethoxy)methane	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	-	< 0.005	-	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	-	< 0.005	-	-
Butyl benzyl phthalate	0.005	mg/L	-	< 0.005	-	-
Chrysene	0.001	mg/L	-	< 0.001	-	-
d-BHC	0.005	mg/L	-	< 0.005	-	-
Di-n-butyl phthalate	0.005	mg/L	-	< 0.005	-	-
Di-n-octyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dibenz(a.h)anthracene	0.001	mg/L	-	< 0.001	-	-

Client Sample ID			QC11	QC12	QC10	NLBH05
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De21316	M15-De21317	M15-De21318	M15-De21319
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit				
Semivolatile Organics						
Dibenz(a,j)acridine	0.005	mg/L	-	< 0.005	-	-
Dibenzofuran	0.005	mg/L	-	< 0.005	-	-
Dieldrin	0.005	mg/L	-	< 0.005	-	-
Diethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethylaminoazobenzene	0.005	mg/L	-	< 0.005	-	-
Diphenylamine	0.005	mg/L	-	< 0.005	-	-
Endosulfan I	0.005	mg/L	-	< 0.005	-	-
Endosulfan II	0.005	mg/L	-	< 0.005	-	-
Endosulfan sulphate	0.005	mg/L	-	< 0.005	-	-
Endrin	0.005	mg/L	-	< 0.005	-	-
Endrin aldehyde	0.005	mg/L	-	< 0.005	-	-
Endrin ketone	0.005	mg/L	-	< 0.005	-	-
Fluoranthene	0.001	mg/L	-	< 0.001	-	-
Fluorene	0.001	mg/L	-	< 0.001	-	-
g-BHC (Lindane)	0.005	mg/L	-	< 0.005	-	-
Heptachlor	0.005	mg/L	-	< 0.005	-	-
Heptachlor epoxide	0.005	mg/L	-	< 0.005	-	-
Hexachlorobenzene	0.005	mg/L	-	< 0.005	-	-
Hexachlorobutadiene	0.005	mg/L	-	< 0.005	-	-
Hexachlorocyclopentadiene	0.005	mg/L	-	< 0.005	-	-
Hexachloroethane	0.005	mg/L	-	< 0.005	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	< 0.001	-	-
Methoxychlor	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodibutylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodipropylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosopiperidine	0.005	mg/L	-	< 0.005	-	-
Naphthalene	0.001	mg/L	-	< 0.001	-	-
Nitrobenzene	0.05	mg/L	-	< 0.05	-	-
Pentachlorobenzene	0.005	mg/L	-	< 0.005	-	-
Pentachloronitrobenzene	0.005	mg/L	-	< 0.005	-	-
Pentachlorophenol	0.01	mg/L	-	< 0.01	-	-
Phenanthrene	0.001	mg/L	-	< 0.001	-	-
Phenol	0.003	mg/L	-	< 0.003	-	-
Pronamide	0.005	mg/L	-	< 0.005	-	-
Pyrene	0.001	mg/L	-	< 0.001	-	-
Trifluralin	0.005	mg/L	-	< 0.005	-	-
Phenol-d6 (surr.)	1	%	-	33	-	-
Nitrobenzene-d5 (surr.)	1	%	-	65	-	-
2-Fluorobiphenyl (surr.)	1	%	-	56	-	-
2.4.6-Tribromophenol (surr.)	1	%	-	60	-	-
Acidity (as CaCO3)	10	mg/L	-	< 10	-	< 10
Ammonia (as N)	0.01	mg/L	-	0.15	-	0.44
Conductivity (at 25°C)	1	uS/cm	-	670	-	310
Nitrate & Nitrite (as N)	0.05	mg/L	-	1.6	-	< 0.05
Nitrite (as N)	0.02	mg/L	-	0.08	-	< 0.02
pH	0.1	pH Units	-	7.8	-	7.9
Phosphate total (as P)	0.05	mg/L	-	< 0.05	-	< 0.05

Client Sample ID			QC11	QC12	QC10	NLBH05
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De21316	M15-De21317	M15-De21318	M15-De21319
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit				
Phosphorus filterable reactive (as P)	0.05	mg/L	-	< 0.05	-	< 0.05
Total Dissolved Solids	10	mg/L	-	440	-	180
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	< 0.2	-	0.5
Total Nitrogen (as N)	0.2	mg/L	-	1.6	-	0.5
Alkalinity (speciated)						
Total Alkalinity (as CaCO ₃)	20	mg/L	-	110	-	83
Major Anions						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	110	-	83
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	-	< 10
Chloride	1	mg/L	-	81	-	46
Nitrate (as N)	0.02	mg/L	-	1.5	-	< 0.02
Sulphate (as S)	5	mg/L	-	44	-	8.8
Heavy Metals						
Aluminium	0.05	mg/L	-	0.26	-	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	0.26	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	< 0.001	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	-	< 0.0002	-	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	-	0.003	-	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.17	-	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	0.08	< 0.05	< 0.05
Lead	0.001	mg/L	-	< 0.001	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	-	< 0.0001	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.001	-	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	0.003	-	0.001
Zinc (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	0.001
Alkali Metals						
Calcium	0.5	mg/L	-	50	-	15
Magnesium	0.5	mg/L	-	9.4	-	11
Magnesium (filtered)	0.5	mg/L	< 0.5	9.4	< 0.5	11
Potassium	0.5	mg/L	-	13	-	1.6
Sodium	0.5	mg/L	-	72	-	33

Client Sample ID			4816	GW1	GW5
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-De21320	M15-De21321	M15-De21322
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	-	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	-	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	-	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	-	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	< 0.1	< 0.1
BTEX					
Benzene	0.001	mg/L	-	< 0.001	< 0.001
Toluene	0.001	mg/L	-	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	-	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	114	110
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	-	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05	< 0.05
Organochlorine Pesticides					
Chlordanes - Total	0.001	mg/L	-	< 0.001	< 0.001
4,4'-DDD	0.0001	mg/L	-	< 0.0001	< 0.0001
4,4'-DDE	0.0001	mg/L	-	< 0.0001	< 0.0001
4,4'-DDT	0.0001	mg/L	-	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	-	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	-	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	-	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	-	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	-	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	-	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	-	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	-	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	-	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	-	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	-	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	-	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	-	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	-	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	-	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	-	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	-	< 0.01	< 0.01
Dibutylchloroendate (surr.)	1	%	-	65	66
Tetrachloro-m-xylene (surr.)	1	%	-	97	75
Organophosphorous Pesticides					
Bolstar	0.002	mg/L	-	< 0.002	< 0.002
Chlorpyrifos	0.002	mg/L	-	< 0.002	< 0.002
Demeton-O	0.002	mg/L	-	< 0.002	< 0.002
Diazinon	0.002	mg/L	-	< 0.002	< 0.002
Dichlorvos	0.002	mg/L	-	< 0.002	< 0.002
Disulfoton	0.002	mg/L	-	< 0.002	< 0.002

Client Sample ID			4816	GW1	GW5
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-De21320	M15-De21321	M15-De21322
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit			
Organophosphorous Pesticides					
Ethion	0.002	mg/L	-	< 0.002	< 0.002
Ethoprop	0.002	mg/L	-	< 0.002	< 0.002
Fenitrothion	0.002	mg/L	-	< 0.002	< 0.002
Fensulfothion	0.002	mg/L	-	< 0.002	< 0.002
Fenthion	0.002	mg/L	-	< 0.002	< 0.002
Merphos	0.002	mg/L	-	< 0.002	< 0.002
Methyl azinphos	0.002	mg/L	-	< 0.002	< 0.002
Methyl parathion	0.002	mg/L	-	< 0.002	< 0.002
Mevinphos	0.002	mg/L	-	< 0.002	< 0.002
Naled	0.002	mg/L	-	< 0.002	< 0.002
Phorate	0.002	mg/L	-	< 0.002	< 0.002
Ronnel	0.002	mg/L	-	< 0.002	< 0.002
Tokuthion	0.002	mg/L	-	< 0.002	< 0.002
Trichloronate	0.002	mg/L	-	< 0.002	< 0.002
Triphenylphosphate (surr.)	1	%	-	86	88
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	0.05	mg/L	-	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	-	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	-	< 0.1	< 0.1
Semivolatile Organics					
2-Methyl-4,6-dinitrophenol	0.03	mg/L	-	< 0.03	< 0.03
1-Chloronaphthalene	0.005	mg/L	-	< 0.005	< 0.005
1-Naphthylamine	0.005	mg/L	-	< 0.005	< 0.005
1,2-Dichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,2,3-Trichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,2,4-Trichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,3-Dichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,3,5-Trichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
1,4-Dichlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
2-Chloronaphthalene	0.005	mg/L	-	< 0.005	< 0.005
2-Chlorophenol	0.003	mg/L	-	< 0.003	< 0.003
2-Methylnaphthalene	0.005	mg/L	-	< 0.005	< 0.005
2-Methylphenol (o-Cresol)	0.003	mg/L	-	< 0.003	< 0.003
2-Naphthylamine	0.005	mg/L	-	< 0.005	< 0.005
2-Nitroaniline	0.005	mg/L	-	< 0.005	< 0.005
2-Nitrophenol	0.01	mg/L	-	< 0.01	< 0.01
2-Picoline	0.005	mg/L	-	< 0.005	< 0.005
2,3,4,6-Tetrachlorophenol	0.01	mg/L	-	< 0.01	< 0.01
2,4-Dichlorophenol	0.003	mg/L	-	< 0.003	< 0.003
2,4-Dimethylphenol	0.003	mg/L	-	< 0.003	< 0.003
2,4-Dinitrophenol	0.03	mg/L	-	< 0.03	< 0.03
2,4-Dinitrotoluene	0.005	mg/L	-	< 0.005	< 0.005
2,4,5-Trichlorophenol	0.01	mg/L	-	< 0.01	< 0.01
2,4,6-Trichlorophenol	0.01	mg/L	-	< 0.01	< 0.01
2,6-Dichlorophenol	0.003	mg/L	-	< 0.003	< 0.003
2,6-Dinitrotoluene	0.005	mg/L	-	< 0.005	< 0.005

Client Sample ID			4816	GW1	GW5
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-De21320	M15-De21321	M15-De21322
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit			
Semivolatile Organics					
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	-	< 0.006	< 0.006
3-Methylcholanthrene	0.005	mg/L	-	< 0.005	< 0.005
3,3'-Dichlorobenzidine	0.005	mg/L	-	< 0.005	< 0.005
4-Aminobiphenyl	0.005	mg/L	-	< 0.005	< 0.005
4-Bromophenyl phenyl ether	0.005	mg/L	-	< 0.005	< 0.005
4-Chloro-3-methylphenol	0.01	mg/L	-	< 0.01	< 0.01
4-Chlorophenyl phenyl ether	0.005	mg/L	-	< 0.005	< 0.005
4-Nitrophenol	0.03	mg/L	-	< 0.03	< 0.03
4,4'-DDD	0.005	mg/L	-	< 0.005	< 0.005
4,4'-DDE	0.005	mg/L	-	< 0.005	< 0.005
4,4'-DDT	0.005	mg/L	-	< 0.005	< 0.005
7,12-Dimethylbenz(a)anthracene	0.005	mg/L	-	< 0.005	< 0.005
a-BHC	0.005	mg/L	-	< 0.005	< 0.005
Acenaphthene	0.001	mg/L	-	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	-	< 0.001	< 0.001
Acetophenone	0.005	mg/L	-	< 0.005	< 0.005
Aldrin	0.005	mg/L	-	< 0.005	< 0.005
Aniline	0.005	mg/L	-	< 0.005	< 0.005
Anthracene	0.001	mg/L	-	< 0.001	< 0.001
b-BHC	0.005	mg/L	-	< 0.005	< 0.005
Benz(a)anthracene	0.001	mg/L	-	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	-	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	-	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	-	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	-	< 0.001	< 0.001
Benzyl chloride	0.005	mg/L	-	< 0.005	< 0.005
Bis(2-chloroethoxy)methane	0.005	mg/L	-	< 0.005	< 0.005
Bis(2-chloroisopropyl)ether	0.005	mg/L	-	< 0.005	< 0.005
Bis(2-ethylhexyl)phthalate	0.005	mg/L	-	< 0.005	< 0.005
Butyl benzyl phthalate	0.005	mg/L	-	< 0.005	< 0.005
Chrysene	0.001	mg/L	-	< 0.001	< 0.001
d-BHC	0.005	mg/L	-	< 0.005	< 0.005
Di-n-butyl phthalate	0.005	mg/L	-	< 0.005	< 0.005
Di-n-octyl phthalate	0.005	mg/L	-	< 0.005	< 0.005
Dibenz(a,h)anthracene	0.001	mg/L	-	< 0.001	< 0.001
Dibenz(a,j)acridine	0.005	mg/L	-	< 0.005	< 0.005
Dibenzofuran	0.005	mg/L	-	< 0.005	< 0.005
Dieldrin	0.005	mg/L	-	< 0.005	< 0.005
Diethyl phthalate	0.005	mg/L	-	< 0.005	< 0.005
Dimethyl phthalate	0.005	mg/L	-	< 0.005	< 0.005
Dimethylaminoazobenzene	0.005	mg/L	-	< 0.005	< 0.005
Diphenylamine	0.005	mg/L	-	< 0.005	< 0.005
Endosulfan I	0.005	mg/L	-	< 0.005	< 0.005
Endosulfan II	0.005	mg/L	-	< 0.005	< 0.005
Endosulfan sulphate	0.005	mg/L	-	< 0.005	< 0.005
Endrin	0.005	mg/L	-	< 0.005	< 0.005
Endrin aldehyde	0.005	mg/L	-	< 0.005	< 0.005
Endrin ketone	0.005	mg/L	-	< 0.005	< 0.005
Fluoranthene	0.001	mg/L	-	< 0.001	< 0.001

Client Sample ID			4816	GW1	GW5
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-De21320	M15-De21321	M15-De21322
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit			
Semivolatile Organics					
Fluorene	0.001	mg/L	-	< 0.001	< 0.001
g-BHC (Lindane)	0.005	mg/L	-	< 0.005	< 0.005
Heptachlor	0.005	mg/L	-	< 0.005	< 0.005
Heptachlor epoxide	0.005	mg/L	-	< 0.005	< 0.005
Hexachlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
Hexachlorobutadiene	0.005	mg/L	-	< 0.005	< 0.005
Hexachlorocyclopentadiene	0.005	mg/L	-	< 0.005	< 0.005
Hexachloroethane	0.005	mg/L	-	< 0.005	< 0.005
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	< 0.001	< 0.001
Methoxychlor	0.005	mg/L	-	< 0.005	< 0.005
N-Nitrosodibutylamine	0.005	mg/L	-	< 0.005	< 0.005
N-Nitrosodipropylamine	0.005	mg/L	-	< 0.005	< 0.005
N-Nitrosopiperidine	0.005	mg/L	-	< 0.005	< 0.005
Naphthalene	0.001	mg/L	-	< 0.001	< 0.001
Nitrobenzene	0.05	mg/L	-	< 0.05	< 0.05
Pentachlorobenzene	0.005	mg/L	-	< 0.005	< 0.005
Pentachloronitrobenzene	0.005	mg/L	-	< 0.005	< 0.005
Pentachlorophenol	0.01	mg/L	-	< 0.01	< 0.01
Phenanthrene	0.001	mg/L	-	< 0.001	< 0.001
Phenol	0.003	mg/L	-	< 0.003	< 0.003
Pronamide	0.005	mg/L	-	< 0.005	< 0.005
Pyrene	0.001	mg/L	-	< 0.001	< 0.001
Trifluralin	0.005	mg/L	-	< 0.005	< 0.005
Phenol-d6 (surr.)	1	%	-	34	43
Nitrobenzene-d5 (surr.)	1	%	-	70	76
2-Fluorobiphenyl (surr.)	1	%	-	61	72
2.4.6-Tribromophenol (surr.)	1	%	-	51	66
Acidity (as CaCO₃)					
	10	mg/L	< 10	< 10	< 10
Ammonia (as N)					
	0.01	mg/L	0.69	0.04	0.14
Conductivity (at 25°C)					
	1	uS/cm	190	560	700
Nitrate & Nitrite (as N)					
	0.05	mg/L	< 0.05	8.7	1.5
Nitrite (as N)					
	0.02	mg/L	< 0.02	0.20	0.07
pH					
	0.1	pH Units	6.3	8.0	7.7
Phosphate total (as P)					
	0.05	mg/L	0.56	0.13	< 0.05
Phosphorus filterable reactive (as P)					
	0.05	mg/L	0.74	0.09	< 0.05
Total Dissolved Solids					
	10	mg/L	120	400	460
Total Kjeldahl Nitrogen (as N)					
	0.2	mg/L	1.4	1.3	< 0.2
Total Nitrogen (as N)					
	0.2	mg/L	1.4	10	1.5
Alkalinity (speciated)					
Total Alkalinity (as CaCO₃)					
	20	mg/L	< 20	130	100
Major Anions					
Bicarbonate Alkalinity (as CaCO₃)					
	20	mg/L	< 20	130	100
Carbonate Alkalinity (as CaCO₃)					
	10	mg/L	< 10	< 10	< 10
Chloride					
	1	mg/L	36	47	82
Nitrate (as N)					
	0.02	mg/L	< 0.02	8.5	1.5
Sulphate (as S)					
	5	mg/L	8.6	13	44

Client Sample ID			4816	GW1	GW5
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M15-De21320	M15-De21321	M15-De21322
Date Sampled			Dec 18, 2015	Dec 18, 2015	Dec 18, 2015
Test/Reference	LOR	Unit			
Heavy Metals					
Aluminium	0.05	mg/L	0.77	0.10	0.24
Aluminium (filtered)	0.05	mg/L	0.62	0.06	0.24
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.003	0.002	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	< 0.05	0.16
Iron (filtered)	0.05	mg/L	0.10	< 0.05	0.07
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.002	0.002
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.002
Alkali Metals					
Calcium	0.5	mg/L	6.4	65	50
Magnesium	0.5	mg/L	5.2	9.8	9.3
Magnesium (filtered)	0.5	mg/L	5.2	9.8	9.3
Potassium	0.5	mg/L	3.0	6.8	13
Sodium	0.5	mg/L	24	31	70

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Dec 30, 2015	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 21, 2015	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 21, 2015	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 30, 2015	7 Day
Organochlorine Pesticides - Method: USEPA 8081 Organochlorine Pesticides	Melbourne	Dec 30, 2015	7 Day
Organophosphorous Pesticides - Method: USEPA 8270 Organophosphorus Pesticides	Melbourne	Dec 30, 2015	7 Day
Semivolatile Organics - Method: USEPA 8270 Semivolatile Organics	Melbourne	Dec 30, 2015	7 Day
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Dec 22, 2015	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 22, 2015	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 22, 2015	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 22, 2015	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 21, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Dec 22, 2015	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 21, 2015	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 22, 2015	14 Day
Major Anions			
Bicarbonate Alkalinity (as CaCO ₃) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 22, 2015	14 Day
Carbonate Alkalinity (as CaCO ₃) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 22, 2015	14 Day
Chloride - Method: MGT 1100A	Melbourne	Dec 22, 2015	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 22, 2015	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Dec 22, 2015	28 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 22, 2015	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 05, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 22, 2015	28 Day
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Dec 21, 2015	180 Day

Description	Testing Site	Extracted	Holding Time
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Dec 22, 2015	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 21, 2015	180 Day
Total Nitrogen Set (as N) Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 22, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 29, 2015	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4,4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4,4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Organophosphorous Pesticides							
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.002			0.002	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl azinphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3,5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2,3,4,6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2,4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2,4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3,3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4.4'-DDD	mg/L	< 0.005			0.005	Pass	
4.4'-DDE	mg/L	< 0.005			0.005	Pass	
4.4'-DDT	mg/L	< 0.005			0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Major Anions							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	115			70-130	Pass	
TRH C10-C14	%	103			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	114			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	103			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	77			70-130	Pass	
TRH C6-C10	%	107			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	95			70-130	Pass	
4,4'-DDE	%	109			70-130	Pass	
4,4'-DDT	%	114			70-130	Pass	
a-BHC	%	109			70-130	Pass	
Aldrin	%	109			70-130	Pass	
b-BHC	%	126			70-130	Pass	
d-BHC	%	113			70-130	Pass	
Dieldrin	%	100			70-130	Pass	
Endosulfan I	%	111			70-130	Pass	
Endosulfan II	%	111			70-130	Pass	
Endosulfan sulphate	%	119			70-130	Pass	
Endrin	%	118			70-130	Pass	
Endrin aldehyde	%	82			70-130	Pass	
Endrin ketone	%	120			70-130	Pass	
g-BHC (Lindane)	%	101			70-130	Pass	
Heptachlor	%	127			70-130	Pass	
Heptachlor epoxide	%	100			70-130	Pass	
Hexachlorobenzene	%	129			70-130	Pass	
Methoxychlor	%	84			70-130	Pass	
LCS - % Recovery							
Organophosphorous Pesticides							
Diazinon	%	90			70-130	Pass	
Ethion	%	76			70-130	Pass	
Fenitrothion	%	76			70-130	Pass	
Methyl parathion	%	80			70-130	Pass	
Mevinphos	%	111			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	104			70-130	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery						
Semivolatile Organics						
1.2.4-Trichlorobenzene	%	118		70-130	Pass	
1.4-Dichlorobenzene	%	111		70-130	Pass	
2-Chlorophenol	%	110		30-130	Pass	
2.4-Dinitrotoluene	%	95		75-125	Pass	
4-Chloro-3-methylphenol	%	102		30-130	Pass	
4-Nitrophenol	%	57		30-130	Pass	
Acenaphthene	%	118		70-130	Pass	
N-Nitrosodipropylamine	%	77		75-125	Pass	
Pentachlorophenol	%	100		30-130	Pass	
Phenol	%	42		30-130	Pass	
Pyrene	%	122		70-130	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	93		70-130	Pass	
Ammonia (as N)	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	%	91		70-130	Pass	
Nitrite (as N)	%	102		70-130	Pass	
Phosphate total (as P)	%	73		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	75		70-130	Pass	
Total Nitrogen (as N)	%	123		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Total Alkalinity (as CaCO ₃)	%	105		70-130	Pass	
LCS - % Recovery						
Major Anions						
Chloride	%	99		70-130	Pass	
Nitrate (as N)	%	91		70-130	Pass	
Sulphate (as S)	%	98		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	109		80-120	Pass	
Aluminium (filtered)	%	80		80-120	Pass	
Arsenic	%	94		80-120	Pass	
Arsenic (filtered)	%	94		80-120	Pass	
Cadmium	%	95		80-120	Pass	
Cadmium (filtered)	%	95		80-120	Pass	
Chromium	%	91		80-120	Pass	
Chromium (filtered)	%	91		80-120	Pass	
Copper	%	93		80-120	Pass	
Copper (filtered)	%	93		80-120	Pass	
Iron	%	92		80-120	Pass	
Iron (filtered)	%	92		80-120	Pass	
Lead	%	93		80-120	Pass	
Lead (filtered)	%	93		80-120	Pass	
Mercury	%	81		75-125	Pass	
Mercury (filtered)	%	81		70-130	Pass	
Nickel	%	94		80-120	Pass	
Nickel (filtered)	%	94		80-120	Pass	
Selenium	%	95		80-120	Pass	
Selenium (filtered)	%	95		80-120	Pass	
Zinc	%	92		80-120	Pass	
Zinc (filtered)	%	92		80-120	Pass	
LCS - % Recovery						

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkali Metals										
Calcium				%	100			70-130	Pass	
Magnesium				%	101			70-130	Pass	
Magnesium (filtered)				%	98			70-130	Pass	
Potassium				%	95			70-130	Pass	
Sodium				%	121			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1					
TRH C6-C9	M15-De21041	NCP	%	106				70-130	Pass	
TRH C10-C14	M15-De23425	NCP	%	72				70-130	Pass	
Spike - % Recovery										
BTEX					Result 1					
Benzene	M15-De21041	NCP	%	101				70-130	Pass	
Toluene	M15-De21041	NCP	%	92				70-130	Pass	
Ethylbenzene	M15-De21041	NCP	%	92				70-130	Pass	
m&p-Xylenes	M15-De21041	NCP	%	98				70-130	Pass	
o-Xylene	M15-De21041	NCP	%	93				70-130	Pass	
Xylenes - Total	M15-De21041	NCP	%	97				70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
Naphthalene	M15-De21041	NCP	%	71				70-130	Pass	
TRH C6-C10	M15-De21041	NCP	%	97				70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
TRH >C10-C16	M15-De23425	NCP	%	72				70-130	Pass	
Spike - % Recovery										
Heavy Metals					Result 1					
Aluminium (filtered)	M15-De23862	NCP	%	91				75-125	Pass	
Arsenic (filtered)	M15-De21316	CP	%	99				70-130	Pass	
Cadmium (filtered)	M15-De21316	CP	%	99				70-130	Pass	
Chromium (filtered)	M15-De21316	CP	%	95				70-130	Pass	
Copper (filtered)	M15-De21316	CP	%	97				70-130	Pass	
Iron (filtered)	M15-De21316	CP	%	101				70-130	Pass	
Lead (filtered)	M15-De21316	CP	%	97				70-130	Pass	
Mercury (filtered)	M15-De21164	NCP	%	81				70-130	Pass	
Nickel (filtered)	M15-De21316	CP	%	98				70-130	Pass	
Selenium (filtered)	M15-De21316	CP	%	99				70-130	Pass	
Zinc (filtered)	S15-De22568	NCP	%	101				70-130	Pass	
Spike - % Recovery										
					Result 1					
Ammonia (as N)	M15-De21445	NCP	%	94				70-130	Pass	
Nitrate & Nitrite (as N)	M15-De21445	NCP	%	94				70-130	Pass	
Nitrite (as N)	M15-De21445	NCP	%	102				70-130	Pass	
Phosphate total (as P)	M15-De21425	NCP	%	117				70-130	Pass	
Phosphorus filterable reactive (as P)	M15-De22831	NCP	%	101				70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M15-De21317	CP	%	80				70-130	Pass	
Spike - % Recovery										
Alkalinity (speciated)					Result 1					
Total Alkalinity (as CaCO ₃)	M15-De22404	NCP	%	122				70-130	Pass	
Spike - % Recovery										
Major Anions					Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M15-De22404	NCP	%	122				70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	M15-De20851	NCP	%	94			70-130	Pass	
Nitrate (as N)	M15-De21445	NCP	%	94			70-130	Pass	
Sulphate (as S)	M15-De21772	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-De21321	CP	%	94			75-125	Pass	
Cadmium	M15-De21321	CP	%	95			75-125	Pass	
Chromium	M15-De21321	CP	%	90			75-125	Pass	
Copper	M15-De21321	CP	%	93			75-125	Pass	
Iron	M15-De21321	CP	%	91			75-125	Pass	
Lead	M15-De21321	CP	%	92			75-125	Pass	
Mercury	M15-De21321	CP	%	88			70-130	Pass	
Nickel	M15-De21321	CP	%	92			75-125	Pass	
Selenium	M15-De21321	CP	%	96			75-125	Pass	
Zinc	M15-De21321	CP	%	93			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M15-De21321	CP	%	117			70-130	Pass	
Magnesium	M15-De21321	CP	%	116			70-130	Pass	
Magnesium (filtered)	M15-De21321	CP	%	116			70-130	Pass	
Potassium	M15-De21321	CP	%	108			70-130	Pass	
Sodium	M15-De21321	CP	%	117			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M15-De21040	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M15-De23525	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M15-De23525	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M15-De23525	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M15-De21040	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M15-De21040	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M15-De21040	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M15-De21040	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M15-De21040	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M15-De21040	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M15-De21040	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M15-De21040	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M15-De23525	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M15-De23525	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M15-De23525	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M15-De23862	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M15-De21316	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M15-De21316	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M15-De21316	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M15-De21316	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M15-De23525	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4,4'-DDD	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDE	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDT	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
a-BHC	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Aldrin	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
b-BHC	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
d-BHC	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Dieldrin	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan I	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan II	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan sulphate	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin aldehyde	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin ketone	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
g-BHC (Lindane)	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor epoxide	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Hexachlorobenzene	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Methoxychlor	M15-De23525	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Toxaphene	M15-De23525	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2-Methyl-4,6-dinitrophenol	M15-De19422	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
1-Chloronaphthalene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1-Naphthylamine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2-Dichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2,3-Trichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2,4-Trichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,3-Dichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,3,5-Trichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
1,4-Dichlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Chloronaphthalene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Chlorophenol	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Methylnaphthalene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Methylphenol (o-Cresol)	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Naphthylamine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Nitroaniline	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Nitrophenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
2-Picoline	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,3,4,6-Tetrachlorophenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
2,4-Dichlorophenol	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,4-Dimethylphenol	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,4-Dinitrophenol	M15-De19422	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2.4-Dinitrotoluene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2.4.5-Trichlorophenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
2.4.6-Trichlorophenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
2.6-Dichlorophenol	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2.6-Dinitrotoluene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
3-Methylcholanthrene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
3.3'-Dichlorobenzidine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Aminobiphenyl	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Bromophenyl phenyl ether	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Chloro-3-methylphenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
4-Chlorophenyl phenyl ether	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Nitrophenol	M15-De19422	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
4.4'-DDD	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4.4'-DDE	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4.4'-DDT	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
7.12-Dimethylbenz(a)anthracene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
a-BHC	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Acenaphthene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Acenaphthylene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Acetophenone	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Aldrin	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Aniline	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Anthracene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
b-BHC	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Benz(a)anthracene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Benzo(a)pyrene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Benzo(b&j)fluoranthene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Benzo(g,h,i)perylene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Benzo(k)fluoranthene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Benzyl chloride	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Bis(2-chloroethoxy)methane	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Bis(2-chloroisopropyl)ether	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Bis(2-ethylhexyl)phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Butyl benzyl phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Chrysene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
d-BHC	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Di-n-butyl phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Di-n-octyl phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Dibenz(a,h)anthracene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Dibenz(a,j)acridine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Dibenzofuran	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Dieldrin	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Diethyl phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Dimethyl phthalate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Dimethylaminoazobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Diphenylamine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endosulfan I	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endosulfan II	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endosulfan sulphate	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endrin	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endrin aldehyde	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Endrin ketone	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Fluoranthene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
Fluorene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
g-BHC (Lindane)	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Heptachlor	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Heptachlor epoxide	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachlorobutadiene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachlorocyclopentadiene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachloroethane	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Methoxychlor	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
N-Nitrosodibutylamine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
N-Nitrosodipropylamine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
N-Nitrosopiperidine	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Naphthalene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Nitrobenzene	M15-De19422	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Pentachlorobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Pentachloronitrobenzene	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Pentachlorophenol	M15-De19422	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phenanthrene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Phenol	M15-De19422	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Promamide	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Pyrene	M15-De19422	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Trifluralin	M15-De19422	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M15-De21445	NCP	mg/L	0.71	0.69	2.0	30%	Pass
Conductivity (at 25°C)	M15-De21317	CP	uS/cm	670	730	9.0	30%	Pass
Nitrate & Nitrite (as N)	M15-De21445	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrite (as N)	M15-De21445	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
pH	M15-De21317	CP	pH Units	7.8	7.7	pass	30%	Pass
Phosphate total (as P)	M15-De21425	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus filterable reactive (as P)	M15-De22831	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M15-De21417	NCP	mg/L	1800	1800	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M15-De21317	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Total Alkalinity (as CaCO3)	M15-De21317	CP	mg/L	110	110	7.0	30%	Pass
Duplicate								
Major Anions				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M15-De21317	CP	mg/L	110	110	7.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M15-De21317	CP	mg/L	< 10	< 10	<1	30%	Pass
Chloride	M15-De21772	NCP	mg/L	83	68	20	30%	Pass
Nitrate (as N)	M15-De21445	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphate (as S)	M15-De21772	NCP	mg/L	12	12	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M15-De21319	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M15-De21321	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M15-De21321	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-De21321	CP	mg/L	0.002	0.002	10	30%	Pass
Copper	M15-De21321	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron	M15-De21321	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M15-De21321	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	M15-De21321	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-De21321	CP	mg/L	0.001	< 0.001	21	30%	Pass
Selenium	M15-De21321	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M15-De21321	CP	mg/L	0.002	0.002	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M15-De21321	CP	mg/L	65	66	1.0	30%	Pass
Magnesium	M15-De21321	CP	mg/L	9.8	9.8	<1	30%	Pass
Magnesium (filtered)	M15-De21321	CP	mg/L	9.8	9.8	<1	30%	Pass
Potassium	M15-De21321	CP	mg/L	6.8	6.6	3.0	30%	Pass
Sodium	M15-De21321	CP	mg/L	31	30	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NORTHLINK (NL)**
Project ID: **ENAUPERT04268AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 22, 2015 8:43 AM**
Eurofins | mgt reference: **484289**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **484289-W**
Project name NORTHLINK (NL)
Project ID ENAUPERT04268AA
Received Date Dec 22, 2015

Client Sample ID			SSR-1	SSR-2	SSR-3	SSM-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De21770	M15-De21771	M15-De21772	M15-De21773
Date Sampled			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	0.01	0.02	0.03
Chloride	1	mg/L	63	63	72	180
Conductivity (at 25°C)	1	uS/cm	310	300	320	680
Nitrate & Nitrite (as N)	0.01	mg/L	< 0.01	0.01	0.02	0.25
Nitrate (as N)	0.01	mg/L	< 0.01	0.01	0.02	0.25
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
pH	0.1	pH Units	7.1	7.0	7.2	6.7
Phosphate total (as P)	0.05	mg/L	< 0.05	0.11	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	12	12	12	24
Total Dissolved Solids	10	mg/L	190	180	210	390
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	30	27	31	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	30	27	31	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.30	0.31	0.28	0.69
Aluminium (filtered)	0.05	mg/L	0.19	0.20	0.21	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Copper	0.001	mg/L	0.001	< 0.001	0.001	0.002
Copper (filtered)	0.001	mg/L	0.001	< 0.001	0.001	0.002
Iron	0.05	mg/L	0.11	0.10	0.10	1.1
Iron (filtered)	0.05	mg/L	0.05	0.06	0.06	0.23
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SSR-1 Water	SSR-2 Water	SSR-3 Water	SSM-1 Water
Sample Matrix			M15-De21770	M15-De21771	M15-De21772	M15-De21773
Eurofins mgt Sample No.			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.013	0.007	0.007	0.088
Zinc (filtered)	0.001	mg/L	0.008	0.007	0.007	0.013
Alkali Metals						
Calcium	0.5	mg/L	7.6	7.7	7.9	24
Magnesium	0.5	mg/L	7.6	7.7	7.7	19
Magnesium (filtered)	0.5	mg/L	8.0	7.4	7.4	16
Potassium	0.5	mg/L	2.5	2.4	2.5	6.0
Sodium	0.5	mg/L	45	45	46	100
Pathogens						
E.coli	1	MPN/100mL	8	<1	5	7
Thermotolerant Coliforms	1	MPN/100mL	33	21	23	>1600

Client Sample ID			SSM-2 Water	SSM-3 Water	SSD-1 Water	SSD-2 Water
Sample Matrix			M15-De21774	M15-De21775	M15-De21776	M15-De21777
Eurofins mgt Sample No.			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	13	< 10
Ammonia (as N)	0.01	mg/L	0.01	0.07	0.35	0.42
Chloride	1	mg/L	150	160	140	150
Conductivity (at 25°C)	1	uS/cm	580	610	490	490
Nitrate & Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	0.90	0.86
Nitrate (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	0.90	0.86
pH	0.1	pH Units	6.7	7.5	6.5	6.5
Phosphate total (as P)	0.05	mg/L	0.37	< 0.05	0.85	0.82
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.49	0.49
Sulphate (as S)	5	mg/L	23	6.0	< 5	< 5
Total Dissolved Solids	10	mg/L	370	370	^{Q19} 480	^{Q19} 480
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	1.2	5.6	15
Total Nitrogen (as N)	0.2	mg/L	1.5	1.2	6.5	16
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	74	28	24
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	74	28	24
Heavy Metals						
Aluminium	0.05	mg/L	4.2	0.49	0.56	0.56
Aluminium (filtered)	0.05	mg/L	< 0.05	0.21	0.32	0.34
Arsenic	0.001	mg/L	0.008	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Copper	0.001	mg/L	0.013	0.003	0.005	0.005
Copper (filtered)	0.001	mg/L	0.002	0.001	0.001	0.002
Iron	0.05	mg/L	48	1.2	0.70	0.65

Client Sample ID			SSM-2 Water	SSM-3 Water	SSD-1 Water	SSD-2 Water
Sample Matrix			M15-De21774	M15-De21775	M15-De21776	M15-De21777
Eurofins mgt Sample No.			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.08	0.41	0.22	0.20
Lead	0.001	mg/L	0.018	0.004	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.13	0.016	0.012	0.015
Zinc (filtered)	0.001	mg/L	0.009	0.003	0.006	0.006
Alkali Metals						
Calcium	0.5	mg/L	22	19	17	17
Magnesium	0.5	mg/L	17	17	11	11
Magnesium (filtered)	0.5	mg/L	15	17	11	11
Potassium	0.5	mg/L	4.9	7.3	24	25
Sodium	0.5	mg/L	93	92	67	67
Pathogens						
E.coli	1	MPN/100mL	10	8	2200	>16000
Thermotolerant Coliforms	1	MPN/100mL	340	540	5400	>16000

Client Sample ID			SSD-3 Water	QC16 Water	QC15 Water	QC14 Water
Sample Matrix			M15-De21778	M15-De21779	M15-De21780	M15-De21781
Eurofins mgt Sample No.			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	12	< 10	-	-
Ammonia (as N)	0.01	mg/L	0.20	0.06	-	-
Chloride	1	mg/L	140	170	-	-
Conductivity (at 25°C)	1	uS/cm	510	600	-	-
Nitrate & Nitrite (as N)	0.01	mg/L	1.2	0.01	-	-
Nitrate (as N)	0.01	mg/L	< 0.01	0.01	-	-
Nitrite (as N)	0.01	mg/L	1.2	< 0.01	-	-
pH	0.1	pH Units	6.6	7.2	-	-
Phosphate total (as P)	0.05	mg/L	0.79	< 0.05	-	-
Phosphorus filterable reactive (as P)	0.05	mg/L	0.47	< 0.05	-	-
Sulphate (as S)	5	mg/L	5.0	6.3	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 470	380	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	9.5	2.1	-	-
Total Nitrogen (as N)	0.2	mg/L	11	2.1	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	26	73	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	26	73	-	-

Client Sample ID			SSD-3	QC16	QC15	QC14
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De21778	M15-De21779	M15-De21780	M15-De21781
Date Sampled			Dec 21, 2015	Dec 21, 2015	Dec 21, 2015	Dec 21, 2015
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.55	2.8	-	-
Aluminium (filtered)	0.05	mg/L	0.34	0.15	0.47	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.003	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	-	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	-	-	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.019	-	-
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.66	2.9	-	-
Iron (filtered)	0.05	mg/L	0.21	0.44	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.019	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.012	0.096	-	-
Zinc (filtered)	0.001	mg/L	0.008	0.003	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	16	19	-	-
Magnesium	0.5	mg/L	11	17	-	-
Magnesium (filtered)	0.5	mg/L	11	17	< 0.5	< 0.5
Potassium	0.5	mg/L	23	7.8	-	-
Sodium	0.5	mg/L	66	91	-	-
Pathogens						
E.coli	1	MPN/100mL	2400	5	-	-
Thermotolerant Coliforms	1	MPN/100mL	16000	170	-	-

Client Sample ID			SSC-1	SSC-2
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M15-De21782	M15-De21783
Date Sampled			Dec 21, 2015	Dec 21, 2015
Test/Reference	LOR	Unit		
Acidity (as CaCO3)				
Acidity (as CaCO3)	10	mg/L	24	25
Ammonia (as N)	0.01	mg/L	0.31	0.07
Chloride	1	mg/L	88	86
Conductivity (at 25°C)	1	uS/cm	300	300
Nitrate & Nitrite (as N)	0.01	mg/L	< 0.01	0.01
Nitrate (as N)	0.01	mg/L	< 0.01	0.01
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01
pH	0.1	pH Units	4.4	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5

Client Sample ID			SSC-1	SSC-2
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M15-De21782	M15-De21783
Date Sampled			Dec 21, 2015	Dec 21, 2015
Test/Reference	LOR	Unit		
Total Dissolved Solids	10	mg/L	Q19 ² 260	Q19 ² 270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.7
Total Nitrogen (as N)	0.2	mg/L	0.5	0.7
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20
Heavy Metals				
Aluminium	0.05	mg/L	0.56	0.52
Aluminium (filtered)	0.05	mg/L	0.38	0.38
Arsenic	0.001	mg/L	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Copper	0.001	mg/L	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001
Iron	0.05	mg/L	0.28	0.22
Iron (filtered)	0.05	mg/L	0.20	0.14
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.001	mg/L	0.022	0.023
Zinc (filtered)	0.001	mg/L	0.022	0.023
Alkali Metals				
Calcium	0.5	mg/L	5.3	4.5
Magnesium	0.5	mg/L	6.7	6.6
Magnesium (filtered)	0.5	mg/L	5.9	5.6
Potassium	0.5	mg/L	3.5	1.8
Sodium	0.5	mg/L	57	55
Pathogens				
E.coli	1	MPN/100mL	55	45
Thermotolerant Coliforms	1	MPN/100mL	700	790

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Dec 22, 2015	14 Day
Ammonia (as N) - Method: E036/E050 Ammonia as N	Sydney	Dec 23, 2015	28 Day
Chloride - Method: MGT 1100A	Melbourne	Dec 22, 2015	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 22, 2015	28 Day
Nitrate (as N) - Method: E037 /E051 Nitrate as N	Sydney	Dec 23, 2015	7 Day
Nitrite (as N) - Method: E037 /E051 Nitrite as N	Sydney	Dec 23, 2015	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 22, 2015	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 22, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Dec 22, 2015	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Dec 22, 2015	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 22, 2015	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 22, 2015	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 22, 2015	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 22, 2015	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 22, 2015	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 22, 2015	180 Day
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Dec 22, 2015	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Dec 22, 2015	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Dec 22, 2015	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: E037 /E051 NO _x (as N)	Sydney	Dec 23, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 29, 2015	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	104			70-130	Pass	
Ammonia (as N)	%	89			70-130	Pass	
Chloride	%	99			70-130	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrate & Nitrite (as N)		%	87			70-130	Pass	
Nitrate (as N)		%	87			70-130	Pass	
Nitrite (as N)		%	99			70-130	Pass	
Phosphate total (as P)		%	80			70-130	Pass	
Sulphate (as S)		%	98			70-130	Pass	
Total Kjeldahl Nitrogen (as N)		%	115			70-130	Pass	
Total Nitrogen (as N)		%	115			70-130	Pass	
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)		%	111			70-130	Pass	
LCS - % Recovery								
Heavy Metals								
Aluminium		%	112			80-120	Pass	
Aluminium (filtered)		%	112			80-120	Pass	
Arsenic		%	97			80-120	Pass	
Arsenic (filtered)		%	97			80-120	Pass	
Cadmium		%	95			80-120	Pass	
Cadmium (filtered)		%	95			80-120	Pass	
Chromium (filtered)		%	93			80-120	Pass	
Copper		%	94			80-120	Pass	
Copper (filtered)		%	94			80-120	Pass	
Iron		%	99			80-120	Pass	
Iron (filtered)		%	99			80-120	Pass	
Lead		%	96			80-120	Pass	
Lead (filtered)		%	96			80-120	Pass	
Mercury		%	85			75-125	Pass	
Mercury (filtered)		%	85			70-130	Pass	
Nickel		%	93			80-120	Pass	
Nickel (filtered)		%	93			80-120	Pass	
Selenium		%	94			80-120	Pass	
Selenium (filtered)		%	94			80-120	Pass	
Zinc		%	95			80-120	Pass	
Zinc (filtered)		%	95			80-120	Pass	
LCS - % Recovery								
Alkali Metals								
Calcium		%	101			70-130	Pass	
Magnesium		%	99			70-130	Pass	
Magnesium (filtered)		%	115			70-130	Pass	
Potassium		%	88			70-130	Pass	
Sodium		%	108			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M15-De21788	NCP	%	103		70-130	Pass	
Phosphate total (as P)	M15-De21953	NCP	%	101		70-130	Pass	
Phosphorus filterable reactive (as P)	M15-De20851	NCP	%	122		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M15-De21317	NCP	%	80		70-130	Pass	
Spike - % Recovery								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M15-De22404	NCP	%	122		70-130	Pass	
Total Alkalinity (as CaCO3)	M15-De22404	NCP	%	122		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M15-De21770	CP	%	100			75-125	Pass	
Cadmium	M15-De21770	CP	%	100			75-125	Pass	
Copper	M15-De21770	CP	%	99			75-125	Pass	
Iron	M15-De21770	CP	%	108			75-125	Pass	
Iron (filtered)	B15-De23088	NCP	%	90			70-130	Pass	
Lead	M15-De21770	CP	%	101			75-125	Pass	
Mercury	M15-De21770	CP	%	97			70-130	Pass	
Mercury (filtered)	B15-De23088	NCP	%	88			70-130	Pass	
Nickel	M15-De21770	CP	%	98			75-125	Pass	
Selenium	M15-De21770	CP	%	100			75-125	Pass	
Zinc	M15-De21770	CP	%	103			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Potassium	M15-De19796	NCP	%	86			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M15-De21772	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M15-De21772	CP	%	89			70-130	Pass	
Nitrate (as N)	M15-De21772	CP	%	89			70-130	Pass	
Nitrite (as N)	M15-De21772	CP	%	99			70-130	Pass	
Sulphate (as S)	M15-De21772	CP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M15-De21773	CP	%	90			70-130	Pass	
Nitrate & Nitrite (as N)	M15-De21773	CP	%	86			70-130	Pass	
Nitrate (as N)	M15-De21773	CP	%	86			70-130	Pass	
Nitrite (as N)	M15-De21773	CP	%	100			70-130	Pass	
Spike - % Recovery									
				Result 1					
Calcium	M15-De21774	CP	%	111			70-130	Pass	
Magnesium	M15-De21774	CP	%	105			70-130	Pass	
Magnesium (filtered)	M15-De21774	CP	%	105			70-130	Pass	
Sodium	M15-De21774	CP	%	107			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M15-De21779	CP	%	102			70-130	Pass	
Cadmium (filtered)	M15-De21779	CP	%	99			70-130	Pass	
Chromium (filtered)	M15-De21779	CP	%	97			70-130	Pass	
Copper (filtered)	M15-De21779	CP	%	98			70-130	Pass	
Lead (filtered)	M15-De21779	CP	%	98			70-130	Pass	
Nickel (filtered)	M15-De21779	CP	%	97			70-130	Pass	
Selenium (filtered)	M15-De21779	CP	%	101			70-130	Pass	
Zinc (filtered)	M15-De21779	CP	%	102			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium (filtered)	M15-De22975	NCP	%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M15-De21770	CP	mg/L	< 10	< 10	<1	30%	Pass	
Conductivity (at 25°C)	M15-De21770	CP	uS/cm	310	320	6.0	30%	Pass	
pH	M15-De21770	CP	pH Units	7.1	7.1	pass	30%	Pass	
Phosphate total (as P)	S15-De21664	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus filterable reactive (as P)	M15-De20851	NCP	mg/L	0.12	0.13	9.9	30%	Pass	
Total Dissolved Solids	M15-De22034	NCP	mg/L	15000	15000	2.0	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M15-De21770	CP	mg/L	30	31	2.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M15-De21770	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M15-De21770	CP	mg/L	30	31	2.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M15-De21770	CP	mg/L	0.30	0.30	2.0	30%	Pass	
Arsenic	M15-De21770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M15-De21770	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Copper	M15-De21770	CP	mg/L	0.001	0.001	<1	30%	Pass	
Iron	M15-De21770	CP	mg/L	0.11	0.13	21	30%	Pass	
Lead	M15-De21770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M15-De21770	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M15-De21770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M15-De21770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M15-De21770	CP	mg/L	0.013	0.013	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M15-De21772	CP	mg/L	0.02	0.01	23	30%	Pass	
Chloride	M15-De21772	CP	mg/L	72	68	20	30%	Pass	
Nitrate & Nitrite (as N)	M15-De21772	CP	mg/L	0.02	< 0.05	16	30%	Pass	
Nitrate (as N)	M15-De21772	CP	mg/L	0.02	< 0.02	16	30%	Pass	
Nitrite (as N)	M15-De21772	CP	mg/L	< 0.01	< 0.02	<1	30%	Pass	
Sulphate (as S)	M15-De21772	CP	mg/L	12	12	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M15-De21773	CP	mg/L	0.03	0.03	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M15-De21773	CP	mg/L	0.25	0.23	10	30%	Pass	
Nitrate (as N)	M15-De21773	CP	mg/L	0.25	0.23	10	30%	Pass	
Nitrite (as N)	M15-De21773	CP	mg/L	< 0.01	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M15-De21774	CP	mg/L	1.5	1.7	13	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M15-De21774	CP	mg/L	22	23	4.0	30%	Pass	
Magnesium	M15-De21774	CP	mg/L	17	17	1.0	30%	Pass	
Magnesium (filtered)	M15-De21774	CP	mg/L	15	15	1.0	30%	Pass	
Potassium	M15-De21774	CP	mg/L	4.9	5.0	2.0	30%	Pass	
Sodium	M15-De21774	CP	mg/L	93	97	4.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M15-De21779	CP	mg/L	0.15	0.16	3.0	30%	Pass	
Arsenic (filtered)	M15-De21779	CP	mg/L	0.001	0.001	1.0	30%	Pass	
Cadmium (filtered)	M15-De21779	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M15-De21779	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M15-De21779	CP	mg/L	< 0.001	0.001	12	30%	Pass	
Iron (filtered)	M15-De21779	CP	mg/L	0.44	0.48	8.0	30%	Pass	
Lead (filtered)	M15-De21779	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury (filtered)	M15-De21779	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M15-De21779	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M15-De21779	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M15-De21779	CP	mg/L	0.003	0.007	81	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium (filtered)	M15-De22975	NCP	mg/L	0.002	0.002	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M15-De21782	CP	mg/L	0.56	0.52	8.0	30%	Pass	
Arsenic	M15-De21782	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M15-De21782	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Copper	M15-De21782	CP	mg/L	0.002	0.002	<1	30%	Pass	
Iron	M15-De21782	CP	mg/L	0.28	0.27	4.0	30%	Pass	
Lead	M15-De21782	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M15-De21782	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M15-De21782	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M15-De21782	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M15-De21782	CP	mg/L	0.022	0.022	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)
Emily Rosenberg	Senior Analyst-Metal (VIC)
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Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **483398-W**
 Project name **NORHLING (NL)**
 Project ID **ENAUPERT04268AA**
 Received Date **Dec 15, 2015**

Client Sample ID			GW09	GW07	NL-BH26	NL-BH18C
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M15-De15171	M15-De15175	M15-De15176	M15-De15177
Date Sampled			Dec 14, 2015	Dec 14, 2015	Dec 14, 2015	Dec 14, 2015
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	26	44	14	24
Ammonia (as N)	0.01	mg/L	0.04	1.8	0.37	0.22
Chloride	1	mg/L	1200	130	50	3800
Conductivity (at 25°C)	1	uS/cm	4000	460	200	11000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	^{G01} < 0.5	0.07	0.12
Nitrate (as N)	0.02	mg/L	< 0.02	^{G01} < 0.2	0.07	0.12
Nitrite (as N)	0.02	mg/L	< 0.02	^{G01} < 0.2	< 0.02	< 0.02
pH	0.1	pH Units	5.6	5.7	5.9	4.5
Phosphate total (as P)	0.05	mg/L	< 0.05	0.20	0.09	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	0.16	0.07	< 0.05
Sulphate (as S)	5	mg/L	41	< 5	< 5	150
Total Dissolved Solids	10	mg/L	2100	^{Q19} 530	130	6700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	3.8	0.8	0.3
Total Nitrogen (as N)	0.2	mg/L	0.3	3.8	0.9	0.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.25	5.1	0.29	0.46
Aluminium (filtered)	0.05	mg/L	0.08	1.3	0.27	0.12
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.007	0.002	0.032
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.030
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Iron	0.05	mg/L	5.6	1.2	0.23	3.4
Iron (filtered)	0.05	mg/L	3.8	0.75	0.23	2.9
Lead	0.001	mg/L	0.002	0.005	0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			GW09 Water	GW07 Water	NL-BH26 Water	NL-BH18C Water
Sample Matrix			M15-De15171	M15-De15175	M15-De15176	M15-De15177
Eurofins mgt Sample No.			Dec 14, 2015	Dec 14, 2015	Dec 14, 2015	Dec 14, 2015
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	0.001	mg/L	0.004	0.002	< 0.001	0.025
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.025
Selenium	0.001	mg/L	< 0.001	0.016	0.006	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.016	0.006	< 0.001
Zinc	0.001	mg/L	0.007	0.002	0.008	0.019
Zinc (filtered)	0.001	mg/L	0.007	0.002	0.008	0.017
Alkali Metals						
Calcium	0.5	mg/L	13	3.1	2.7	54
Magnesium	0.5	mg/L	84	7.0	2.7	250
Magnesium (filtered)	0.5	mg/L	84	7.0	2.7	250
Potassium	0.5	mg/L	6.6	3.3	1.9	16
Sodium	0.5	mg/L	570	61	24	1900

Client Sample ID			QC1 Water	QC2 Water
Sample Matrix			M15-De15178	M15-De15179
Eurofins mgt Sample No.			Dec 14, 2015	Dec 14, 2015
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001
Alkali Metals				
Magnesium (filtered)	0.5	mg/L	< 0.5	< 0.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Dec 15, 2015	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 15, 2015	28 Day
Chloride - Method: MGT 1100A	Melbourne	Dec 15, 2015	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 15, 2015	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 15, 2015	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 15, 2015	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 15, 2015	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 15, 2015	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Dec 15, 2015	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Dec 15, 2015	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Dec 15, 2015	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 15, 2015	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 15, 2015	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 15, 2015	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Dec 15, 2015	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Dec 21, 2015	180 Day
Alkali Metals (filtered) - Method: USEPA 6010 Heavy Metals	Melbourne	Dec 15, 2015	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 15, 2015	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 16, 2015	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Magnesium (filtered)	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	105			70-130	Pass	
Ammonia (as N)	%	98			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	100			70-130	Pass		
Nitrate & Nitrite (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	94			70-130	Pass		
Nitrite (as N)	%	107			70-130	Pass		
Phosphate total (as P)	%	107			70-130	Pass		
Sulphate (as S)	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	102			70-130	Pass		
Total Nitrogen (as N)	%	102			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)	%	111			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	93			80-120	Pass		
Aluminium (filtered)	%	93			80-120	Pass		
Arsenic	%	100			80-120	Pass		
Arsenic (filtered)	%	100			80-120	Pass		
Cadmium	%	103			80-120	Pass		
Cadmium (filtered)	%	103			80-120	Pass		
Chromium	%	98			80-120	Pass		
Chromium (filtered)	%	98			80-120	Pass		
Copper	%	98			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	85			80-120	Pass		
Iron (filtered)	%	85			80-120	Pass		
Lead	%	100			80-120	Pass		
Lead (filtered)	%	100			80-120	Pass		
Mercury	%	95			75-125	Pass		
Mercury (filtered)	%	95			70-130	Pass		
Nickel	%	93			80-120	Pass		
Nickel (filtered)	%	93			80-120	Pass		
Selenium	%	105			80-120	Pass		
Selenium (filtered)	%	105			80-120	Pass		
Zinc	%	99			80-120	Pass		
Zinc (filtered)	%	99			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	100			70-130	Pass		
Magnesium	%	109			70-130	Pass		
Magnesium (filtered)	%	105			70-130	Pass		
Potassium	%	96			70-130	Pass		
Sodium	%	96			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M15-De14936	NCP	%	104		70-130	Pass	
Nitrate & Nitrite (as N)	M15-De14936	NCP	%	100		70-130	Pass	
Nitrate (as N)	M15-De14936	NCP	%	100		70-130	Pass	
Nitrite (as N)	M15-De14936	NCP	%	93		70-130	Pass	
Phosphate total (as P)	B15-De13949	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M15-De15171	CP	%	96		70-130	Pass	
Total Alkalinity (as CaCO3)	M15-De15171	CP	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-De14985	NCP	%	96			75-125	Pass	
Cadmium	M15-De14985	NCP	%	98			75-125	Pass	
Chromium	M15-De14985	NCP	%	95			75-125	Pass	
Copper	M15-De14985	NCP	%	92			75-125	Pass	
Lead	M15-De14985	NCP	%	96			75-125	Pass	
Mercury	M15-De14985	NCP	%	85			70-130	Pass	
Nickel	M15-De14985	NCP	%	89			75-125	Pass	
Selenium	M15-De14985	NCP	%	99			75-125	Pass	
Zinc	M15-De14985	NCP	%	97			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M15-De15171	CP	%	100			70-130	Pass	
Magnesium	M15-De15171	CP	%	101			70-130	Pass	
Magnesium (filtered)	M15-De15171	CP	%	101			70-130	Pass	
Potassium	M15-De15171	CP	%	92			70-130	Pass	
Sodium	M15-De15171	CP	%	110			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M15-De15175	CP	%	96			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M15-De15175	CP	%	96			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M15-De15176	CP	%	94			70-130	Pass	
Phosphorus filterable reactive (as P)	M15-De15176	CP	%	108			70-130	Pass	
Sulphate (as S)	M15-De15176	CP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M15-De14944	NCP	%	98			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M15-De15178	CP	%	99			70-130	Pass	
Cadmium (filtered)	M15-De15178	CP	%	101			70-130	Pass	
Chromium (filtered)	M15-De15178	CP	%	97			70-130	Pass	
Copper (filtered)	M15-De15178	CP	%	96			70-130	Pass	
Iron (filtered)	M15-De15178	CP	%	93			70-130	Pass	
Lead (filtered)	M15-De15178	CP	%	100			70-130	Pass	
Mercury (filtered)	M15-De15178	CP	%	95			70-130	Pass	
Nickel (filtered)	M15-De15178	CP	%	91			70-130	Pass	
Selenium (filtered)	M15-De15178	CP	%	103			70-130	Pass	
Zinc (filtered)	M15-De15178	CP	%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M15-De16286	NCP	mg/L	560	560	<1	30%	Pass	
Ammonia (as N)	M15-De14936	NCP	mg/L	0.05	0.06	8.0	30%	Pass	
Conductivity (at 25°C)	M15-De15171	CP	uS/cm	4000	4000	<1	30%	Pass	
Nitrate & Nitrite (as N)	M15-De14936	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M15-De14936	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M15-De14936	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M15-De15171	CP	pH Units	5.6	5.6	pass	30%	Pass	
Phosphate total (as P)	B15-De13949	NCP	mg/L	0.26	0.28	9.0	30%	Pass	
Total Dissolved Solids	M15-De17702	NCP	mg/L	2200	2100	1.0	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M15-De15171	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M15-De15171	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M15-De15171	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M15-De14985	NCP	mg/L	0.24	0.28	16	30%	Pass
Arsenic	M15-De14985	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M15-De14985	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M15-De14985	NCP	mg/L	0.002	0.002	8.0	30%	Pass
Copper	M15-De14985	NCP	mg/L	0.004	0.004	6.0	30%	Pass
Iron	S15-De11990	NCP	mg/L	39	40	2.0	30%	Pass
Lead	M15-De14985	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	M15-De14985	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M15-De14985	NCP	mg/L	0.001	0.002	19	30%	Pass
Selenium	M15-De14985	NCP	mg/L	0.004	0.004	23	30%	Pass
Zinc	M15-De14985	NCP	mg/L	0.003	0.004	26	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M15-De15171	CP	mg/L	13	13	<1	30%	Pass
Magnesium	M15-De15171	CP	mg/L	84	84	<1	30%	Pass
Magnesium (filtered)	M15-De15171	CP	mg/L	84	84	<1	30%	Pass
Potassium	M15-De15171	CP	mg/L	6.6	6.4	3.0	30%	Pass
Sodium	M15-De15171	CP	mg/L	570	530	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M15-De15175	CP	mg/L	3.1	3.1	<1	30%	Pass
Magnesium	M15-De15175	CP	mg/L	7.0	7.1	2.0	30%	Pass
Magnesium (filtered)	M15-De15175	CP	mg/L	7.0	7.1	2.0	30%	Pass
Potassium	M15-De15175	CP	mg/L	3.3	3.3	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M15-De15176	CP	mg/L	50	49	2.2	30%	Pass
Phosphorus filterable reactive (as P)	M15-De15176	CP	mg/L	0.07	0.08	2.7	30%	Pass
Sulphate (as S)	M15-De15176	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M15-De15178	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M15-De15178	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M15-De15178	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M15-De15178	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M15-De15178	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPTERT04483AA MONITORING EVENT 2**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 28, 2016 8:58 AM**
Eurofins | mgt reference: **486999**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINEGW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 29, 2016 8:49 AM**
Eurofins | mgt reference: **487053**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

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Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 29, 2016 8:49 AM**
Eurofins | mgt reference: **487090**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

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Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA
Address: 89-91 Burswood Road
 Burswood
 WA 6100

Project Name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA

Order No.:
Report #: 487090
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Jan 29, 2016 8:49 AM
Due: Feb 5, 2016
Priority: 5 Day
Contact Name: Richelle Bunbury

Eurofins | mgt Client Manager: Natalie Krasselt

Sample Detail					Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Nitrite (as N)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Total Nitrogen Set (as N)	Eurofins mgt Suite B11		
Laboratory where analysis is conducted																																						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217																																						
Brisbane Laboratory - NATA Site # 20794																																						
External Laboratory																																						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																		
MW17	Jan 28, 2016		Water	M16-Ja16992	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW19	Jan 28, 2016		Water	M16-Ja16993	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW20	Jan 28, 2016		Water	M16-Ja16994	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW21	Jan 28, 2016		Water	M16-Ja16995	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW22	Jan 28, 2016		Water	M16-Ja16996	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW23	Jan 28, 2016		Water	M16-Ja16997	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW10	Jan 28, 2016		Water	M16-Ja16998	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
QC24	Jan 28, 2016		Water	M16-Ja16999			X			X					X		X		X		X		X									X		X				
QC23	Jan 28, 2016		Water	M16-Ja17000		X		X		X		X			X		X		X		X		X		X						X		X					

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 1, 2016 8:25 AM**
Eurofins | mgt reference: **487310**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPT04483AA MONITORING EVENT 2**
COC number: **4483AA**
Turn around time: **5 Day**
Date/Time received: **Feb 2, 2016 8:24 AM**
Eurofins | mgt reference: **487551**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

SAMPLE MW36 NOT RECEIVED

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 3, 2016 8:35 AM**
Eurofins | mgt reference: **487605**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

CERTIFICATE OF ANALYSIS

Work Order : EP1600665 Client : COFFEY ENVIRONMENTS PTY LTD Contact : RICHELLE BUNBURY Address : SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100 E-mail : richelle.bunbury@coffey.com Telephone : +61 08 6462 7900 Facsimile : +61 08 6462 7936 Project : NL_Baseline GW_SW Monitoring Order number : ---- C-O-C number : ---- Sampler : HARRIET CARTER Site : ---- Quote number : ----	Page : 1 of 5 Laboratory : Environmental Division Perth Contact : Mitchell Bevan Address : 10 Hod Way Malaga WA Australia 6090 E-mail : mitchell.bevan@alsglobal.com Telephone : 08 9209 7619 Facsimile : +61-8-9209 7600 QC Level : NEPM 2013 B3 & ALS QC Standard Date Samples Received : 28-Jan-2016 15:15 Date Analysis Commenced : 29-Jan-2016 Issue Date : 05-Feb-2016 11:43 No. of samples received : 1 No. of samples analysed : 1
---	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- MW006, estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC22	----	----	----	----
Client sampling date / time		[28-Jan-2016]			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1600665-001	-----	-----	-----	-----	-----
				Result	Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.44	----	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	338	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	225	----	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU	0.6	----	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	25	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	25	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	65	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	7	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	8	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	47	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	3	----	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.26	----	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.001	----	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.10	----	----	----	----	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.27	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC22	----	----	----	----
Client sampling date / time				[28-Jan-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600665-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.002	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.11	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.10	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.7	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.03	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC22	----	----	----	----
Client sampling date / time				[28-Jan-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600665-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	3.16	----	----	----	----	
Total Cations	----	0.01	meq/L	3.13	----	----	----	----	
Ionic Balance	----	0.01	%	0.60	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	~33	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	~33	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1600665	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 28-Jan-2016
C-O-C number	: ----	Date Analysis Commenced	: 29-Jan-2016
Sampler	: HARRIET CARTER	Issue Date	: 05-Feb-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 346202)									
EP1600668-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.87	7.87	0.00	0% - 20%
EP1600671-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.38	7.35	0.407	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 346197)									
EP1600654-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	119000	119000	0.453	0% - 20%
EP1600647-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	7380	7340	0.678	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 348390)									
EP1600663-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3470	3600	3.74	0% - 20%
EP1600715-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4550	4600	1.05	0% - 20%
EA045: Turbidity (QC Lot: 344957)									
EP1600665-001	QC22	EA045: Turbidity	----	0.1	NTU	0.6	0.6	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 346201)									
EP1600661-004	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	513	520	1.48	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	513	520	1.48	0% - 20%
EP1600671-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	182	180	1.15	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	182	180	1.15	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 344993)									
EP1600692-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	770	795	3.22	0% - 20%
EP1600665-001	QC22	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	45	10.9	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 344994)									
EP1600692-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2490	2480	0.450	0% - 20%
EP1600665-001	QC22	ED045G: Chloride	16887-00-6	1	mg/L	65	65	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 346067)									
EP1600599-005	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	242	243	0.412	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	136	136	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	16	16	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	329	330	0.515	0% - 20%
EP1600612-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	184	185	0.704	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	57	57	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	32	32	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	378	382	0.920	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 346069)									
EP1600633-005	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.011	0.012	0.00	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.050	0.051	0.00	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	0.76	0.78	3.29	0% - 50%		
EG020T: Total Metals by ICP-MS (QC Lot: 346369)									
EP1600715-002	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.027	0.025	6.77	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.019	0.019	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.261	0.274	4.81	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	22.1	22.6	2.15	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	1.21	1.20	0.989	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.20	0.19	0.00	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.94	0.96	1.49	0% - 20%
EG020A-T: Iron	7439-89-6	0.05	mg/L	0.31	0.30	0.00	No Limit		
EG035F: Dissolved Mercury by FIMS (QC Lot: 346066)									
EP1600553-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1600609-007	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 346372)									
EP1600665-001	QC22	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 348326)									
EP1600665-001	QC22	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 348346)									
EP1600665-001	QC22	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 346338)									
EP1600651-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.07	0.00	No Limit
EP1600633-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	30.2	31.5	4.41	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 344996)									
EP1600665-001	QC22	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 346339)									
EP1600651-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.88	2.92	1.74	0% - 20%
EP1600633-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.00	No Limit

Page : 5 of 9
 Work Order : EP1600665
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 345996)									
EP1600651-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.1	10.7	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 345995)									
EP1600651-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 344995)									
EP1600692-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1600665-001	QC22	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 346202)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 346197)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.1	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 348390)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.8	83	111	
				<10	293 mg/L	117	70	130	
EA045: Turbidity (QCLot: 344957)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.4	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 346201)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00	1	mg/L	<1	----	----	----	----	
	1								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	99.0	76	126	
				<1	200 mg/L	91.8	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 344993)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	89	113	
				<1	100 mg/L	102	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 344994)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	97.4	84	120	
				<1	1000 mg/L	102	84	110	
ED093F: Dissolved Major Cations (QCLot: 346067)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.2	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	95.2	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.0	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.8	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 346069)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.5	84	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.9	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.4	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	102	84	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	98.2	85	107	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 346069) - continued									
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.3	85	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	98.2	84	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	112	88	112	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.5	89	115	
EG020T: Total Metals by ICP-MS (QCLot: 346369)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	95.2	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	90.6	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	90.8	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.0	85	111	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	91.2	82	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.4	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	90.6	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.9	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	89.1	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.8	81	103	
EG035F: Dissolved Mercury by FIMS (QCLot: 346066)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	105	92	116	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 346372)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 348326)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 348346)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	86.0	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 346338)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 344996)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	92.6	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 346339)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 345996)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	90.0	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 345995)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	92.9	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 344995)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.6	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 344993)							
EP1600665-001	QC22	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	119	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 344994)							
EP1600665-001	QC22	ED045G: Chloride	16887-00-6	1000 mg/L	106	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 346069)							
EP1600633-006	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	120	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	108	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	109	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	108	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	89.9	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	110	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	118	70	130
EG020T: Total Metals by ICP-MS (QCLot: 346369)							
EP1600715-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	102	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	92.9	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	89.0	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	85.6	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	94.7	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	# Not Determined	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	96.2	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 346066)							
EP1600599-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	92.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 346372)							
EP1600685-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	103	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 348326)							
ES1602216-010	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 348346)							
ES1602216-007	Anonymous	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	116	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 346338)							
EP1600633-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 344996)							
EP1600665-001	QC22	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	117	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 346339)							
EP1600633-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.9	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 345996)							
EP1600651-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	97.4	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 345995)							
EP1600651-005	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	99.6	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 344995)							
EP1600665-001	QC22	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	111	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1600665	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: NL_Baseline GW_SW Monitoring	Date Samples Received	: 28-Jan-2016
Site	: ----	Issue Date	: 05-Feb-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG020T: Total Metals by ICP-MS	EP1600715--001	Anonymous	Nickel	7440-02-0	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK055G: Ammonia as N by Discrete Analyser	EP1600633--001	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved QC22		----	----	----	01-Feb-2016	28-Jan-2016	4

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC22	28-Jan-2016		----	----	----	01-Feb-2016	28-Jan-2016	✘
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC22	28-Jan-2016		----	----	----	01-Feb-2016	25-Feb-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC22	28-Jan-2016		----	----	----	03-Feb-2016	04-Feb-2016	✔
EA045: Turbidity								
Miscellaneous Plastic bottle -unpreserved (EA045) QC22	28-Jan-2016		----	----	----	29-Jan-2016	30-Jan-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC22	28-Jan-2016	----	----	----	01-Feb-2016	11-Feb-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC22	28-Jan-2016	----	----	----	29-Jan-2016	25-Feb-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC22	28-Jan-2016	----	----	----	29-Jan-2016	25-Feb-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC22	28-Jan-2016	----	----	----	02-Feb-2016	25-Feb-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC22	28-Jan-2016	----	----	----	02-Feb-2016	26-Jul-2016	✓
EG020T: Total Metals by ICP-MS							
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC22	28-Jan-2016	02-Feb-2016	26-Jul-2016	✓	02-Feb-2016	26-Jul-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC22	28-Jan-2016	----	----	----	02-Feb-2016	25-Feb-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Miscellaneous Nitric preserved - unfiltered (EG035T) QC22	28-Jan-2016	----	----	----	02-Feb-2016	25-Feb-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC22	28-Jan-2016	----	----	----	03-Feb-2016	26-Jul-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC22	28-Jan-2016	03-Feb-2016	26-Jul-2016	✓	03-Feb-2016	26-Jul-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC22	28-Jan-2016	----	----	----	03-Feb-2016	25-Feb-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC22	28-Jan-2016	----	----	----	29-Jan-2016	30-Jan-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC22	28-Jan-2016	----	----	----	03-Feb-2016	25-Feb-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC22	28-Jan-2016	02-Feb-2016	25-Feb-2016	✓	03-Feb-2016	25-Feb-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC22	28-Jan-2016	02-Feb-2016	25-Feb-2016	✓	03-Feb-2016	25-Feb-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC22	28-Jan-2016	----	----	----	29-Jan-2016	30-Jan-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC22	28-Jan-2016	----	----	----	29-Jan-2016	29-Jan-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **486999-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPT04483AA MONITORING EVENT 2**
 Received Date **Jan 28, 2016**

Client Sample ID			QC18	MW1	MW2	MW3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ja16228	M16-Ja16229	M16-Ja16230	M16-Ja16231
Date Sampled			Jan 27, 2016	Jan 27, 2016	Jan 27, 2016	Jan 27, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	11	11
Chloride	1	mg/L	60	46	93	16
Conductivity (at 25°C)	1	uS/cm	490	510	370	270
pH	0.1	pH Units	7.4	8.1	7.3	7.7
Phosphate total (as P)	0.05	mg/L	0.06	0.15	0.06	0.28
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.24
Sulphate (as S)	5	mg/L	30	11	12	6.3
Total Dissolved Solids	10	mg/L	360	360	250	200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	120	37	110
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	120	37	110
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	0.13	0.86
Nitrate (as N)	0.02	mg/L	10	12	0.09	< 0.02
Nitrite (as N)	0.02	mg/L	0.07	0.06	< 0.02	0.20
Organic Nitrogen (as N)	0.2	mg/L	3.0	1.6	1.1	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.0	1.6	1.2	1.2
Total Nitrogen (as N)	0.2	mg/L	13	14	1.3	1.4
Heavy Metals						
Aluminium	0.05	mg/L	^{R14} 59	^{R14} 6.6	1.9	0.24
Aluminium (filtered)	0.05	mg/L	0.10	0.12	0.28	0.16
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.059	0.008	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.013	0.004	0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	0.001	< 0.001
Iron	0.05	mg/L	^{R14} 6.3	^{R14} 1.0	0.85	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.28	< 0.05
Lead	0.001	mg/L	0.073	0.008	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			QC18 Water	MW1 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Ja16228	M16-Ja16229	M16-Ja16230	M16-Ja16231
Eurofins mgt Sample No.			Jan 27, 2016	Jan 27, 2016	Jan 27, 2016	Jan 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.035	0.019	0.026	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.011	0.025	< 0.005
Mercury	0.0001	mg/L	0.0005	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.015	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.039	0.017	0.008	0.008
Zinc (filtered)	0.001	mg/L	< 0.001	0.004	0.007	0.002
Alkali Metals						
Calcium	0.5	mg/L	53	48	17	34
Magnesium	0.5	mg/L	4.8	4.7	6.8	2.8
Potassium	0.5	mg/L	26	23	0.9	1.8
Sodium	0.5	mg/L	22	21	28	7.8

Client Sample ID			QC19 Water	QC20 Water
Sample Matrix			M16-Ja16232	M16-Ja16253
Eurofins mgt Sample No.			Jan 27, 2016	Jan 27, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Jan 29, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Jan 29, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 29, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 29, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Jan 29, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Jan 28, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 02, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 01, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 01, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 01, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 01, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 01, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 28, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 28, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jan 28, 2016	180 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	104			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Chloride	%	122	70-130	Pass			
Phosphate total (as P)	%	85	70-130	Pass			
Sulphate (as S)	%	95	70-130	Pass			
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	75	70-130	Pass			
Nitrate (as N)	%	99	70-130	Pass			
Nitrite (as N)	%	104	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	86	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Arsenic	%	90	80-120	Pass			
Arsenic (filtered)	%	90	80-120	Pass			
Cadmium	%	91	80-120	Pass			
Cadmium (filtered)	%	103	70-130	Pass			
Chromium	%	91	80-120	Pass			
Chromium (filtered)	%	91	80-120	Pass			
Copper	%	90	80-120	Pass			
Copper (filtered)	%	90	80-120	Pass			
Iron	%	104	80-120	Pass			
Iron (filtered)	%	88	80-120	Pass			
Lead	%	91	80-120	Pass			
Lead (filtered)	%	91	80-120	Pass			
Manganese	%	90	80-120	Pass			
Manganese (filtered)	%	90	80-120	Pass			
Mercury	%	92	75-125	Pass			
Mercury (filtered)	%	92	70-130	Pass			
Nickel	%	91	80-120	Pass			
Nickel (filtered)	%	91	80-120	Pass			
Selenium	%	89	80-120	Pass			
Selenium (filtered)	%	89	80-120	Pass			
Zinc	%	91	80-120	Pass			
Zinc (filtered)	%	91	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	101	70-130	Pass			
Magnesium	%	109	70-130	Pass			
Potassium	%	89	70-130	Pass			
Sodium	%	97	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Phosphate total (as P)	M16-Ja15457	NCP	%	95	70-130	Pass	
Spike - % Recovery							
Alkalinity (speciated)							
				Result 1			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ja16783	NCP	%	70	70-130	Pass	
Spike - % Recovery							
Nitrogens (speciated)							
				Result 1			
Ammonia (as N)	M16-Ja16547	NCP	%	93	70-130	Pass	
Nitrate (as N)	M16-Ja16547	NCP	%	122	70-130	Pass	
Nitrite (as N)	M16-Ja16547	NCP	%	103	70-130	Pass	
Spike - % Recovery							
Heavy Metals							
				Result 1			
Arsenic (filtered)	M16-Ja16636	NCP	%	103	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	M16-Fe01628	NCP	%	114			70-130	Pass	
Chromium (filtered)	M16-Ja16636	NCP	%	92			70-130	Pass	
Copper (filtered)	M16-Ja16636	NCP	%	86			70-130	Pass	
Iron (filtered)	M16-Ja16636	NCP	%	98			70-130	Pass	
Lead (filtered)	M16-Ja16636	NCP	%	86			70-130	Pass	
Manganese (filtered)	M16-Ja17025	NCP	%	90			70-130	Pass	
Mercury (filtered)	M16-Ja16636	NCP	%	84			70-130	Pass	
Nickel (filtered)	M16-Ja16636	NCP	%	85			70-130	Pass	
Selenium (filtered)	M16-Ja16636	NCP	%	104			70-130	Pass	
Zinc (filtered)	M16-Ja16636	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ja16545	NCP	%	100			70-130	Pass	
Potassium	M16-Ja16545	NCP	%	103			70-130	Pass	
Sodium	M16-Ja16545	NCP	%	107			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ja16229	CP	%	106			70-130	Pass	
Phosphorus reactive (as P)	M16-Ja16229	CP	%	113			70-130	Pass	
Sulphate (as S)	M16-Ja16229	CP	%	92			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-Ja16660	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Ja16229	CP	%	97			75-125	Pass	
Cadmium	M16-Ja16229	CP	%	98			75-125	Pass	
Chromium	M16-Ja16229	CP	%	99			75-125	Pass	
Copper	M16-Ja16229	CP	%	96			75-125	Pass	
Iron	S16-Ja14646	NCP	%	93			75-125	Pass	
Lead	M16-Ja16229	CP	%	97			75-125	Pass	
Manganese	M16-Ja16229	CP	%	95			75-125	Pass	
Mercury	M16-Ja16229	CP	%	99			70-130	Pass	
Nickel	M16-Ja16229	CP	%	96			75-125	Pass	
Selenium	M16-Ja16229	CP	%	99			75-125	Pass	
Zinc	M16-Ja16229	CP	%	95			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Magnesium	M16-Ja16545	NCP	%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Ja16228	CP	uS/cm	490	500	1.0	30%	Pass	
pH	M16-Ja16228	CP	pH Units	7.4	7.3	pass	30%	Pass	
Phosphate total (as P)	M16-Ja15457	NCP	mg/L	0.15	0.09	2.0	30%	Pass	
Total Dissolved Solids	M16-Ja15379	NCP	mg/L	2700	2700	1.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ja16228	CP	mg/L	110	110	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ja16228	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ja16228	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Ja16228	CP	mg/L	110	110	1.0	30%	Pass	

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	B16-Ja15372	NCP	mg/L	0.02	0.01	14	30%	Pass
Nitrate (as N)	B16-Ja15372	NCP	mg/L	0.08	0.06	26	30%	Pass
Nitrite (as N)	B16-Ja15372	NCP	mg/L	< 0.02	0.03	100	30%	Fail
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ja17025	NCP	mg/L	< 0.05	0.06	97	30%	Fail
Arsenic (filtered)	M16-Ja16636	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Fe01627	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium (filtered)	M16-Ja16636	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Ja16636	NCP	mg/L	0.014	0.014	1.0	30%	Pass
Iron (filtered)	M16-Ja16636	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-Ja16636	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Ja16636	NCP	mg/L	2.2	2.3	3.0	30%	Pass
Mercury (filtered)	M16-Ja16636	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Ja16636	NCP	mg/L	0.077	0.076	1.0	30%	Pass
Selenium (filtered)	M16-Ja16636	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Ja16636	NCP	mg/L	0.013	0.013	2.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ja16545	NCP	mg/L	62	69	12	30%	Pass
Magnesium	M16-Ja16660	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Potassium	M16-Ja16545	NCP	mg/L	580	670	14	30%	Pass
Sodium	M16-Ja16545	NCP	mg/L	1400	1600	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ja16229	CP	mg/L	< 10	< 10	<1	30%	Pass
Chloride	M16-Ja16229	CP	mg/L	46	52	12	30%	Pass
Phosphorus reactive (as P)	M16-Ja16229	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ja16229	CP	mg/L	11	11	1.8	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Ja16660	NCP	mg/L	0.5	0.6	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ja16229	CP	mg/L	6.6	6.4	2.0	30%	Pass
Arsenic	M16-Ja16229	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-Ja16229	CP	mg/L	0.008	0.007	5.0	30%	Pass
Copper	M16-Ja16229	CP	mg/L	0.004	0.005	6.0	30%	Pass
Iron	M16-Ja16229	CP	mg/L	1.0	1.0	1.0	30%	Pass
Lead	M16-Ja16229	CP	mg/L	0.008	0.008	1.0	30%	Pass
Manganese	M16-Ja16229	CP	mg/L	0.019	0.019	1.0	30%	Pass
Mercury	M16-Ja16229	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ja16229	CP	mg/L	0.002	0.002	6.0	30%	Pass
Selenium	M16-Ja16229	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ja16229	CP	mg/L	0.017	0.017	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R14	These results have been confirmed by repeat analysis

Authorised By

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Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

Coffey Environments Pty Ltd WA
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Burswood
WA 6100



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The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **487053-W**
Project name NL_BASELINEGW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jan 29, 2016

Client Sample ID			MW4 Water	MW5 Water	MW6 Water	SW1-1 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Ja16782	M16-Ja16783	M16-Ja16784	M16-Ja16785
Date Sampled			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	20	17	< 10
Chloride	1	mg/L	23	41	93	70
Conductivity (at 25°C)	1	uS/cm	180	180	500	380
pH	0.1	pH Units	7.4	5.8	7.1	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.07	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	23	13
Total Dissolved Solids	10	mg/L	120	^{Q19} 160	350	230
Turbidity	1	NTU	-	-	-	1.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	46	< 20	31	29
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	46	< 20	31	29
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.17	0.91	1.5	0.52
Nitrate (as N)	0.02	mg/L	0.39	0.07	0.05	< 0.1
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.1
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.4	0.3	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.3	1.8	0.5
Total Nitrogen (as N)	0.2	mg/L	0.8	1.4	1.9	0.5
Heavy Metals						
Aluminium	0.05	mg/L	0.17	2.8	1.0	0.22
Aluminium (filtered)	0.05	mg/L	0.05	1.1	0.30	0.19
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00020	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.44	0.75	0.11
Iron (filtered)	0.05	mg/L	< 0.05	0.31	0.68	0.08
Lead	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001

Client Sample ID			MW4 Water	MW5 Water	MW6 Water	SW1-1 Water
Sample Matrix			M16-Ja16782	M16-Ja16783	M16-Ja16784	M16-Ja16785
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.013	0.017	0.009
Zinc (filtered)	0.001	mg/L	0.002	0.009	0.006	0.005
Alkali Metals						
Calcium	0.5	mg/L	17	1.1	19	6.4
Magnesium	0.5	mg/L	1.9	3.9	15	8.0
Potassium	0.5	mg/L	< 0.5	0.8	6.7	2.1
Sodium	0.5	mg/L	15	25	46	56
Pathogens						
E.coli	1	MPN/100mL	-	-	-	23
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	350

Client Sample ID			SW1-2 Water	SW1-3 Water	SW2-1 Water	SW2-2 Water
Sample Matrix			M16-Ja16786	M16-Ja16787	M16-Ja16788	M16-Ja16789
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	70	71	69	71
Conductivity (at 25°C)	1	uS/cm	380	380	420	420
pH	0.1	pH Units	7.1	7.0	8.1	8.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	13	13	10	10
Total Dissolved Solids	10	mg/L	220	220	240	250
Turbidity	1	NTU	1.8	1.6	3.6	2.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	29	29	73	71
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	29	29	73	71
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.12	0.06	0.06	0.06
Nitrate (as N)	0.02	mg/L	0.06	0.06	0.07	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	0.5
Total Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.6	0.6

Client Sample ID			SW1-2 Water	SW1-3 Water	SW2-1 Water	SW2-2 Water
Sample Matrix			M16-Ja16786	M16-Ja16787	M16-Ja16788	M16-Ja16789
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.25	0.28	0.40	0.35
Aluminium (filtered)	0.05	mg/L	0.17	0.20	0.29	0.25
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.12	0.16	0.24	0.23
Iron (filtered)	0.05	mg/L	0.09	0.09	0.19	0.20
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.008	0.005	0.005
Zinc (filtered)	0.001	mg/L	0.005	0.005	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	6.3	6.2	18	16
Magnesium	0.5	mg/L	7.7	7.8	8.7	7.7
Potassium	0.5	mg/L	2.1	2.3	2.1	2.1
Sodium	0.5	mg/L	55	55	57	52
Pathogens						
E.coli	1	MPN/100mL	2	5	79	23
Thermotolerant Coliforms	1	MPN/100mL	26	94	110	170

Client Sample ID			SW2-3 Water	QC21 Water
Sample Matrix			M16-Ja16790	M16-Ja16791
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Acidity (as CaCO3)	10	mg/L	< 10	< 10
Chloride	1	mg/L	70	69
Conductivity (at 25°C)	1	uS/cm	410	370
pH	0.1	pH Units	8.1	7.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10	13
Total Dissolved Solids	10	mg/L	230	210
Turbidity	1	NTU	2.8	2.7

Client Sample ID			SW2-3	QC21
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Ja16790	M16-Ja16791
Date Sampled			Jan 28, 2016	Jan 28, 2016
Test/Reference	LOR	Unit		
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	68	27
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	68	27
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	0.06	0.04
Nitrate (as N)	0.02	mg/L	0.07	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.4
Total Nitrogen (as N)	0.2	mg/L	0.7	0.5
Heavy Metals				
Aluminium	0.05	mg/L	0.34	0.25
Aluminium (filtered)	0.05	mg/L	0.32	0.26
Arsenic	0.001	mg/L	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	0.12
Iron (filtered)	0.05	mg/L	0.20	0.10
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.007
Zinc (filtered)	0.001	mg/L	0.003	0.005
Alkali Metals				
Calcium	0.5	mg/L	17	6.5
Magnesium	0.5	mg/L	8.1	8.1
Potassium	0.5	mg/L	2.1	2.1
Sodium	0.5	mg/L	53	56
Pathogens				
E.coli	1	MPN/100mL	33	11
Thermotolerant Coliforms	1	MPN/100mL	350	70

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Jan 29, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 29, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 29, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 29, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Jan 29, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 02, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 03, 2016	14 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Feb 01, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 01, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 01, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jan 29, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jan 29, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: MGT 1100A	Melbourne	Jan 29, 2016	28 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Jan 29, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 01, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 01, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jan 29, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: 89-91 Burswood Road Burswood WA 6100 Project Name: NL_BASELINEGW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 487053 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Jan 29, 2016 8:49 AM Due: Feb 5, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Client Manager: Natalie Krasselt		

Sample Detail	Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E coli	Hydroxide Alkalinity (as CaCO3)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Eurofins mgt Suite B11	Nitrogens (speciated)
Laboratory where analysis is conducted																																				
Melbourne Laboratory - NATA Site # 1254 & 14271																																				
Sydney Laboratory - NATA Site # 18217																																				
Brisbane Laboratory - NATA Site # 20794																																				
External Laboratory																																				
QC21	Jan 28, 2016		Water	M16-Ja16791	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Acidity (as CaCO ₃)	mg/L	< 10		10	Pass	
Chloride	mg/L	< 1		1	Pass	
Phosphate total (as P)	mg/L	< 0.05		0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05		0.05	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
Method Blank						
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Method Blank						
Nitrogens (speciated)						
Ammonia (as N)	mg/L	< 0.01		0.01	Pass	
Nitrate (as N)	mg/L	< 0.02		0.02	Pass	
Nitrite (as N)	mg/L	< 0.02		0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
Method Blank						
Heavy Metals						
Aluminium	mg/L	< 0.05		0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05		0.05	Pass	
Arsenic	mg/L	< 0.001		0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium	mg/L	< 0.00005		0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005		0.00005	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	104			70-130	Pass		
Chloride	%	112			70-130	Pass		
Phosphate total (as P)	%	93			70-130	Pass		
Sulphate (as S)	%	93			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	%	116			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	91			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	96			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	92			80-120	Pass		
Aluminium (filtered)	%	92			80-120	Pass		
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	102			80-120	Pass		
Cadmium	%	89			70-130	Pass		
Cadmium (filtered)	%	93			70-130	Pass		
Chromium	%	102			80-120	Pass		
Chromium (filtered)	%	99			80-120	Pass		
Copper	%	94			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	90			80-120	Pass		
Iron (filtered)	%	99			80-120	Pass		
Lead	%	93			80-120	Pass		
Lead (filtered)	%	100			80-120	Pass		
Manganese	%	94			80-120	Pass		
Manganese (filtered)	%	106			80-120	Pass		
Mercury	%	91			75-125	Pass		
Mercury (filtered)	%	92			70-130	Pass		
Nickel	%	92			80-120	Pass		
Nickel (filtered)	%	98			80-120	Pass		
Selenium	%	93			80-120	Pass		
Selenium (filtered)	%	109			80-120	Pass		
Zinc	%	96			80-120	Pass		
Zinc (filtered)	%	106			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	98			70-130	Pass		
Magnesium	%	109			70-130	Pass		
Potassium	%	97			70-130	Pass		
Sodium	%	96			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Ja16782	CP	%	112		70-130	Pass	
Phosphate total (as P)	M16-Ja14298	NCP	%	97		70-130	Pass	
Phosphorus reactive (as P)	M16-Ja16782	CP	%	111		70-130	Pass	
Sulphate (as S)	M16-Ja16782	CP	%	98		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Alkalinity (as CaCO ₃)	M16-Ja16639	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Ja16657	NCP	%	88		70-130	Pass	
Nitrate (as N)	M16-Ja16657	NCP	%	87		70-130	Pass	
Nitrite (as N)	M16-Ja16657	NCP	%	98		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ja14298	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ja16545	NCP	%	100		70-130	Pass	
Sodium	M16-Ja16545	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ja16783	CP	%	70		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	M16-Ja16783	CP	%	92		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Magnesium	M16-Ja16545	NCP	%	97		70-130	Pass	
Potassium	M16-Ja16545	NCP	%	103		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	M16-Ja16786	CP	%	97		70-130	Pass	
Cadmium (filtered)	M16-Ja16786	CP	%	97		70-130	Pass	
Chromium (filtered)	M16-Ja16786	CP	%	94		70-130	Pass	
Copper (filtered)	M16-Ja16786	CP	%	96		70-130	Pass	
Iron (filtered)	M16-Ja16786	CP	%	89		70-130	Pass	
Lead (filtered)	M16-Ja16786	CP	%	95		70-130	Pass	
Manganese (filtered)	M16-Ja16786	CP	%	98		70-130	Pass	
Mercury (filtered)	M16-Ja16786	CP	%	87		70-130	Pass	
Nickel (filtered)	M16-Ja16786	CP	%	96		70-130	Pass	
Selenium (filtered)	M16-Ja16786	CP	%	98		70-130	Pass	
Zinc (filtered)	M16-Ja16786	CP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Ja16787	CP	%	96		75-125	Pass	
Cadmium	M16-Ja16787	CP	%	97		75-125	Pass	
Chromium	M16-Ja16787	CP	%	96		75-125	Pass	
Copper	M16-Ja16787	CP	%	95		75-125	Pass	
Iron	M16-Ja16787	CP	%	76		75-125	Pass	
Lead	M16-Ja16787	CP	%	94		75-125	Pass	
Manganese	M16-Ja16787	CP	%	96		75-125	Pass	
Mercury	M16-Ja16787	CP	%	94		70-130	Pass	
Nickel	M16-Ja16787	CP	%	96		75-125	Pass	
Selenium	M16-Ja16787	CP	%	99		75-125	Pass	
Zinc	M16-Ja16787	CP	%	100		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ja16791	CP	%	102		70-130	Pass	
Phosphorus reactive (as P)	M16-Ja16791	CP	%	99		70-130	Pass	
Sulphate (as S)	M16-Ja16791	CP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Ja16791	CP	%	84		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ja16782	CP	mg/L	23	23	<1	30%	Pass	
Conductivity (at 25°C)	M16-Ja16782	CP	uS/cm	180	180	1.0	30%	Pass	
pH	M16-Ja16782	CP	pH Units	7.4	7.4	pass	30%	Pass	
Phosphate total (as P)	M16-Ja16959	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Ja16782	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ja16782	CP	mg/L	< 5	< 5	<1	30%	Pass	
Total Dissolved Solids	M16-Ja16885	NCP	mg/L	6000	6000	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Ja16782	CP	mg/L	46	46	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Ja16782	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Ja16782	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-Ja16782	CP	mg/L	46	46	1.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Ja16657	NCP	mg/L	0.04	0.04	18	30%	Pass	
Nitrate (as N)	M16-Ja16657	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Ja16657	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ja16959	NCP	mg/L	1.8	1.8	1.1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium (filtered)	M16-Ja16782	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Ja16545	NCP	mg/L	62	69	12	30%	Pass	
Magnesium	M16-Ja16660	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M16-Ja16545	NCP	mg/L	1400	1600	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M16-Ja16783	CP	mg/L	20	21	9.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Potassium	M16-Ja16638	NCP	mg/L	7.4	7.0	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-Fe00394	NCP	NTU	76	76	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Ja16786	CP	mg/L	0.25	0.19	9.0	30%	Pass	
Aluminium (filtered)	M16-Ja16786	CP	mg/L	0.17	0.19	9.0	30%	Pass	
Arsenic (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Ja16786	CP	mg/L	0.09	0.09	3.0	30%	Pass	
Lead (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Ja16786	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M16-Ja16786	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ja16786	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Ja16786	CP	mg/L	0.005	0.005	14	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ja16787	CP	mg/L	0.28	0.25	11	30%	Pass
Arsenic	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Ja16787	CP	mg/L	0.16	0.15	6.0	30%	Pass
Lead	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Ja16787	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Ja16787	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Ja16787	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ja16787	CP	mg/L	0.008	0.007	6.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Ja16790	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ja16791	CP	mg/L	69	71	1.7	30%	Pass
Phosphorus reactive (as P)	M16-Ja16791	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ja16791	CP	mg/L	13	13	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPTERT04483AA MONITORING EVENT 2**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 4, 2016 8:59 AM**
Eurofins | mgt reference: **487822**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- Ultratrace metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	QC27	----	----	----	----
Client sampling date / time			[01-Feb-2016]	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1600739-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.20	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	312	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	304	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	78	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	31	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	73	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	3	----	----	----	----
Magnesium	7439-95-4	1	mg/L	5	----	----	----	----
Sodium	7440-23-5	1	mg/L	39	----	----	----	----
Potassium	7440-09-7	1	mg/L	2	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.77	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.003	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L	5.06	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	27.0	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC27	----	----	----	----
Client sampling date / time				[01-Feb-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600739-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.028	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.034	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.004	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.008	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.013	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	6.35	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.27	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.05	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC27	----	----	----	----
Client sampling date / time				[01-Feb-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600739-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	2.70	----	----	----	----	
Total Cations	----	0.01	meq/L	2.31	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1600739	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 01-Feb-2016
C-O-C number	: ----	Date Analysis Commenced	: 02-Feb-2016
Sampler	: ----	Issue Date	: 09-Feb-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 347563)									
EP1600739-001	QC27	EA005-P: pH Value	----	0.01	pH Unit	5.20	5.07	2.53	0% - 20%
EP1600745-008	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.05	8.08	0.372	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 347561)									
EP1600736-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	753	766	1.70	0% - 20%
EP1600739-001	QC27	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	312	314	0.952	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 349605)									
EP1600743-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	902	872	3.44	0% - 20%
EP1600736-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	446	432	3.19	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 347562)									
EP1600736-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	126	127	0.949	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	126	127	0.949	0% - 20%
EP1600739-001	QC27	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
ED038A: Acidity (QC Lot: 350770)									
EP1600688-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	4	4	0.00	No Limit
EP1600695-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	13	13	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 348985)									
EP1600736-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	43	43	0.00	0% - 20%
EP1600767-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1750	1770	1.20	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 348986)									
EP1600736-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	143	144	0.00	0% - 20%
EP1600767-005	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	4020	4040	0.355	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 347481)									
EP1600736-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	83	82	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	12	12	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	20	20	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	100	98	0.00	0% - 20%
EP1600630-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	97	96	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	16	15	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	16	15	0.00	0% - 50%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 347481) - continued									
EP1600630-004	Anonymous	ED093F: Sodium	7440-23-5	1	mg/L	66	66	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 347484)									
EP1600715-007	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EG020T: Total Metals by ICP-MS (QC Lot: 347474)									
EP1600630-007	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EP1600695-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.016	0.015	0.00	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.040	0.036	9.05	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.284	0.283	0.439	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	7.42	7.41	0.196	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	7.25	6.95	4.26	0% - 20%		
EG035F: Dissolved Mercury by FIMS (QC Lot: 347482)									
EP1600630-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 347478)									
EP1600630-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 349478)									
EP1600739-001	QC27	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit

Page : 5 of 9
 Work Order : EP1600739
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 349499)									
EP1600739-001	QC27	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 348901)									
EP1600721-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.23	0.23	0.00	0% - 20%
EP1600736-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.23	0.22	5.49	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 348983)									
EP1600736-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1600767-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.15	0.15	0.00	0% - 50%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 348900)									
EP1600721-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.13	0.14	0.00	0% - 50%
EP1600736-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.11	0.13	10.8	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 348506)									
EP1600688-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.9	1.6	13.6	No Limit
EP1600736-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.5	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 348505)									
EP1600688-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.19	0.19	0.00	No Limit
EP1600736-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.08	0.08	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 348984)									
EP1600736-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1600767-005	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	----	----	----	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 347563)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 347561)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	99.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 349605)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.4	83	111	
				<10	293 mg/L	118	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 347562)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	103	76	126	
				<1	200 mg/L	94.8	90	106	
ED038A: Acidity (QCLot: 350770)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	95.5	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 348985)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	104	89	113	
				<1	100 mg/L	112	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 348986)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	99.0	84	120	
				<1	1000 mg/L	101	84	110	
ED093F: Dissolved Major Cations (QCLot: 347481)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	97.4	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.0	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.2	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 347484)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	104	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	84	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.5	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.3	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.5	84	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	100	85	107	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 347484) - continued								
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.6	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	100	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	89	115
EG020T: Total Metals by ICP-MS (QCLot: 347474)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	92.4	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.1	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.7	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.1	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	96.0	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.3	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	90.7	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.3	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.3	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.1	81	103
EG035F: Dissolved Mercury by FIMS (QCLot: 347482)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	104	92	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 347478)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.8	87	115
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 349478)								
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	108	87	111
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 349499)								
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.9	85	113
EK055G: Ammonia as N by Discrete Analyser (QCLot: 348901)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	99.8	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 348983)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.2	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 348900)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 348506)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.2	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 348505)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.1	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 348984)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.3	87	115



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 348985)							
EP1600736-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	114	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 348986)							
EP1600736-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	101	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 347484)							
EP1600736-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	100	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	101	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	96.2	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	96.6	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	98.6	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	98.6	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	70	130
EG020T: Total Metals by ICP-MS (QCLot: 347474)							
EP1600646-114	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	102	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.6	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	90.2	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	91.8	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	101	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	101	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 347482)							
EP1600630-006	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	116	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 347478)							
EP1600646-115	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	90.8	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 349478)							
EP1600744-002	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	113	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 349499)							
EP1600748-003	Anonymous	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	124	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 348901)							
EP1600721-004	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	112	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 348983)							
EP1600736-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	121	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 348900)							

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 Work Order : EP1600739
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 348900) - continued							
EP1600721-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	103	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 348506)							
EP1600688-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	90.3	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 348505)							
EP1600688-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.8	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 348984)							
EP1600736-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	114	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1600739	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 01-Feb-2016
Site	: ----	Issue Date	: 09-Feb-2016
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC27	----	----	----	02-Feb-2016	01-Feb-2016	1

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC27	01-Feb-2016	----	----	----	02-Feb-2016	01-Feb-2016	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC27	01-Feb-2016	----	----	----	02-Feb-2016	29-Feb-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC27	01-Feb-2016	----	----	----	04-Feb-2016	08-Feb-2016	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC27	01-Feb-2016	----	----	----	02-Feb-2016	15-Feb-2016	✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC27	01-Feb-2016	----	----	----	05-Feb-2016	15-Feb-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC27	01-Feb-2016	----	----	----	03-Feb-2016	30-Jul-2016	✓
EG020T: Total Metals by ICP-MS							
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC27	01-Feb-2016	03-Feb-2016	30-Jul-2016	✓	03-Feb-2016	30-Jul-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Miscellaneous Nitric preserved - unfiltered (EG035T) QC27	01-Feb-2016	----	----	----	04-Feb-2016	29-Feb-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC27	01-Feb-2016	----	----	----	04-Feb-2016	30-Jul-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC27	01-Feb-2016	04-Feb-2016	30-Jul-2016	✓	04-Feb-2016	30-Jul-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	03-Feb-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	29-Feb-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC27	01-Feb-2016	08-Feb-2016	29-Feb-2016	✓	08-Feb-2016	29-Feb-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC27	01-Feb-2016	08-Feb-2016	29-Feb-2016	✓	08-Feb-2016	29-Feb-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC27	01-Feb-2016	----	----	----	03-Feb-2016	03-Feb-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
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 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **487090-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jan 29, 2016**

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-Ja16992	M16-Ja16993	M16-Ja16994	M16-Ja16995
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	57	160	84	150
Ammonia (as N)	0.01	mg/L	0.18	0.35	0.33	0.41
Chloride	1	mg/L	38	98	78	99
Conductivity (at 25°C)	1	uS/cm	230	490	350	550
Nitrate & Nitrite (as N)	0.05	mg/L	0.72	0.66	0.22	0.96
Nitrate (as N)	0.02	mg/L	0.68	0.66	0.22	0.95
Nitrite (as N)	0.02	mg/L	0.04	< 0.1	< 0.02	< 0.1
pH	0.1	pH Units	4.1	3.6	4.1	3.9
Phosphate total (as P)	0.05	mg/L	< 0.05	0.09	< 0.05	0.06
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	19	13	34
Total Dissolved Solids	10	mg/L	160	310	220	380
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.8	0.5	1.0
Total Nitrogen (as N)	0.2	mg/L	0.7	1.5	0.7	2.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.7	31	5.0	39
Aluminium (filtered)	0.05	mg/L	1.7	11	6.1	7.8
Arsenic	0.001	mg/L	< 0.001	0.003	0.002	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.038	0.001	0.026
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.007	< 0.001	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.90	1.1	2.3	27
Iron (filtered)	0.05	mg/L	0.68	0.07	1.6	24
Lead	0.001	mg/L	0.003	0.034	0.001	0.013
Lead (filtered)	0.001	mg/L	0.002	< 0.001	0.001	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-Ja16992	M16-Ja16993	M16-Ja16994	M16-Ja16995
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0003	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.013	0.006	0.014
Nickel (filtered)	0.001	mg/L	< 0.001	0.006	0.006	0.010
Selenium	0.001	mg/L	< 0.001	0.004	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.020	0.004	0.010
Zinc (filtered)	0.001	mg/L	0.008	0.015	0.002	0.006
Alkali Metals						
Calcium	0.5	mg/L	3.9	1.2	< 0.5	5.7
Magnesium	0.5	mg/L	3.3	2.5	3.0	7.0
Potassium	0.5	mg/L	0.9	< 0.5	< 0.5	1.1
Sodium	0.5	mg/L	33	61	51	50

Client Sample ID			MW22 Water	MW23 Water	MW10 Water	QC24 Water
Sample Matrix			M16-Ja16996	M16-Ja16997	M16-Ja16998	M16-Ja16999
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	110	19	19	-
Ammonia (as N)	0.01	mg/L	^{R09} 0.91	0.17	0.64	-
Chloride	1	mg/L	69	49	27	-
Conductivity (at 25°C)	1	uS/cm	360	310	250	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.67	6.9	1.7	-
Nitrate (as N)	0.02	mg/L	0.72	6.9	1.5	-
Nitrite (as N)	0.02	mg/L	< 0.1	< 0.1	0.16	-
pH	0.1	pH Units	3.5	7.1	7.9	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	20	14	5.6	-
Total Dissolved Solids	10	mg/L	220	^{Q19} 240	^{Q19} 210	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	^{R09} 0.8	1.0	1.0	-
Total Nitrogen (as N)	0.2	mg/L	1.5	7.9	2.7	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	62	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	62	-
Heavy Metals						
Aluminium	0.05	mg/L	3.3	4.8	1.7	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.38	3.0
Arsenic	0.001	mg/L	0.001	< 0.001	0.002	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.004	0.005	-

Client Sample ID			MW22 Water	MW23 Water	MW10 Water	QC24 Water
Sample Matrix			M16-Ja16996	M16-Ja16997	M16-Ja16998	M16-Ja16999
Eurofins mgt Sample No.			Jan 28, 2016	Jan 28, 2016	Jan 28, 2016	Jan 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	0.003	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	10	0.36	7.8	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	3.4	9.5
Lead	0.001	mg/L	< 0.001	0.003	0.002	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.010	0.011	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.010	0.002	0.002	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.008
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.006	0.025	-
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.005	0.004
Alkali Metals						
Calcium	0.5	mg/L	9.4	21	36	-
Magnesium	0.5	mg/L	6.7	4.2	3.3	-
Potassium	0.5	mg/L	1.1	3.8	1.2	-
Sodium	0.5	mg/L	40	27	12	-

Client Sample ID			QC23 Water
Sample Matrix			M16-Ja17000
Eurofins mgt Sample No.			Jan 28, 2016
Date Sampled			
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	1.6
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	0.06
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	0.007
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.001	mg/L	0.004

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 11, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 29, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 01, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 29, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jan 29, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Jan 29, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 03, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jan 29, 2016	28 Day
Eurofins mgt Suite B11			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 01, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Jan 29, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 01, 2016	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Jan 29, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jan 29, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 01, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 01, 2016	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	107			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	92			70-130	Pass		
Chloride	%	105			70-130	Pass		
Nitrate & Nitrite (as N)	%	90			70-130	Pass		
Nitrate (as N)	%	90			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Phosphate total (as P)	%	93			70-130	Pass		
Sulphate (as S)	%	97			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	95			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)	%	101			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	92			80-120	Pass		
Aluminium (filtered)	%	92			80-120	Pass		
Arsenic	%	98			80-120	Pass		
Arsenic (filtered)	%	98			80-120	Pass		
Cadmium	%	100			80-120	Pass		
Cadmium (filtered)	%	100			80-120	Pass		
Chromium	%	98			80-120	Pass		
Chromium (filtered)	%	98			80-120	Pass		
Copper	%	100			80-120	Pass		
Copper (filtered)	%	100			80-120	Pass		
Iron	%	97			80-120	Pass		
Iron (filtered)	%	97			80-120	Pass		
Lead	%	99			80-120	Pass		
Lead (filtered)	%	99			80-120	Pass		
Manganese	%	99			80-120	Pass		
Manganese (filtered)	%	99			80-120	Pass		
Mercury	%	93			75-125	Pass		
Mercury (filtered)	%	93			70-130	Pass		
Nickel	%	98			80-120	Pass		
Nickel (filtered)	%	98			80-120	Pass		
Selenium	%	97			80-120	Pass		
Selenium (filtered)	%	97			80-120	Pass		
Zinc	%	103			80-120	Pass		
Zinc (filtered)	%	103			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	111			70-130	Pass		
Magnesium	%	110			70-130	Pass		
Potassium	%	96			70-130	Pass		
Sodium	%	93			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Fe00971	NCP	%	95		70-130	Pass	
Chloride	M16-Ja16992	CP	%	106		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Fe00971	NCP	%	93		70-130	Pass	
Nitrate (as N)	M16-Fe00971	NCP	%	93		70-130	Pass	
Nitrite (as N)	M16-Fe00971	NCP	%	100		70-130	Pass	
Phosphate total (as P)	M16-Ja17099	NCP	%	100		70-130	Pass	
Phosphorus reactive (as P)	M16-Ja16992	CP	%	103		70-130	Pass	
Sulphate (as S)	M16-Ja16992	CP	%	97		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)	M16-Ja14298	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ja17529	NCP	%	115			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Ja16992	CP	%	124			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Ja16992	CP	%	105			75-125	Pass	
Cadmium	M16-Ja16992	CP	%	107			75-125	Pass	
Chromium	M16-Ja16992	CP	%	104			75-125	Pass	
Copper	M16-Ja16992	CP	%	106			75-125	Pass	
Iron	M16-Ja16787	NCP	%	76			75-125	Pass	
Iron (filtered)	M16-Ja16786	NCP	%	89			70-130	Pass	
Lead	M16-Ja16992	CP	%	106			75-125	Pass	
Manganese	M16-Ja16992	CP	%	106			75-125	Pass	
Mercury	M16-Ja16992	CP	%	104			70-130	Pass	
Nickel	M16-Ja16992	CP	%	106			75-125	Pass	
Selenium	M16-Ja16992	CP	%	106			75-125	Pass	
Zinc	M16-Ja16992	CP	%	108			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium (filtered)	M16-Ja16993	CP	%	94			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ja16993	CP	%	117			70-130	Pass	
Magnesium	M16-Ja16993	CP	%	106			70-130	Pass	
Potassium	M16-Ja16993	CP	%	95			70-130	Pass	
Sodium	M16-Ja16993	CP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M16-Ja16995	CP	%	92			70-130	Pass	
Cadmium (filtered)	M16-Ja16995	CP	%	93			70-130	Pass	
Chromium (filtered)	M16-Ja16995	CP	%	92			70-130	Pass	
Copper (filtered)	M16-Ja16995	CP	%	92			70-130	Pass	
Lead (filtered)	M16-Ja16995	CP	%	93			70-130	Pass	
Manganese (filtered)	M16-Ja16995	CP	%	93			70-130	Pass	
Mercury (filtered)	M16-Ja16995	CP	%	87			70-130	Pass	
Nickel (filtered)	M16-Ja16995	CP	%	90			70-130	Pass	
Selenium (filtered)	M16-Ja16995	CP	%	94			70-130	Pass	
Zinc (filtered)	M16-Ja16995	CP	%	96			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Fe00971	NCP	mg/L	0.09	0.08	15	30%	Pass	
Chloride	M16-Ja16992	CP	mg/L	38	37	3.7	30%	Pass	
Nitrate & Nitrite (as N)	M16-Fe00971	NCP	mg/L	0.33	0.28	16	30%	Pass	
Nitrate (as N)	M16-Fe00971	NCP	mg/L	0.33	0.28	16	30%	Pass	
Nitrite (as N)	M16-Fe00971	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	M16-Ja17099	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Ja16992	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ja16992	CP	mg/L	15	14	3.3	30%	Pass	
Total Dissolved Solids	M16-Ja16885	NCP	mg/L	6000	6000	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ja17099	NCP	mg/L	1.4	1.3	5.4	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ja16992	CP	mg/L	1.7	1.7	<1	30%	Pass
Arsenic	M16-Ja16992	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Ja16992	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Ja16992	CP	mg/L	0.003	0.002	14	30%	Pass
Copper	M16-Ja16992	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Ja16992	CP	mg/L	0.90	0.89	<1	30%	Pass
Lead	M16-Ja16992	CP	mg/L	0.003	0.003	<1	30%	Pass
Manganese	M16-Ja16992	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Ja16992	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ja16992	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Ja16992	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ja16992	CP	mg/L	0.008	0.008	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Ja16993	CP	uS/cm	490	490	<1	30%	Pass
pH	M16-Ja16993	CP	pH Units	3.6	3.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ja16993	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ja16993	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ja16993	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Ja16993	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Sodium	M16-Ja16993	CP	mg/L	61	60	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ja16995	CP	mg/L	7.8	7.5	4.0	30%	Pass
Arsenic (filtered)	M16-Ja16995	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Ja16995	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Ja16995	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Ja16995	CP	mg/L	24	23	5.0	30%	Pass
Lead (filtered)	M16-Ja16995	CP	mg/L	0.002	0.002	3.0	30%	Pass
Manganese (filtered)	M16-Ja16995	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Ja16995	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Ja16995	CP	mg/L	0.010	0.010	1.0	30%	Pass
Selenium (filtered)	M16-Ja16995	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Ja16995	CP	mg/L	0.006	0.007	5.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R09	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **487310-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Feb 01, 2016**

Client Sample ID			MW9 Water	MW11 Water	MW12 Water	MW13 Water
Sample Matrix			M16-Fe00527	M16-Fe00528	M16-Fe00529	M16-Fe00530
Eurofins mgt Sample No.						
Date Sampled			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	88	33	140
Conductivity (at 25°C)	1	uS/cm	90	500	160	390
pH	0.1	pH Units	5.5	3.9	4.0	3.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Dissolved Solids	10	mg/L	52	280	110	270
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Major Anions						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	19	100	41	58
Nitrate (as N)	0.02	mg/L	1.2	0.02	< 0.02	0.04
Sulphate (as S)	5	mg/L	< 5	23	9.8	35
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.06	0.02	0.07
Nitrate (as N)	0.02	mg/L	1.2	0.02	< 0.02	0.04
Nitrite (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.2	< 0.2	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.3	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	1.5	0.3	< 0.2	0.3
Heavy Metals						
Aluminium	0.05	mg/L	0.96	4.2	2.5	2.3
Aluminium (filtered)	0.05	mg/L	0.48	3.3	2.2	1.9
Arsenic	0.001	mg/L	0.001	0.002	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.7	6.0	1.5	3.1
Iron (filtered)	0.05	mg/L	1.2	0.99	0.49	2.8

Client Sample ID			MW9 Water	MW11 Water	MW12 Water	MW13 Water
Sample Matrix			M16-Fe00527	M16-Fe00528	M16-Fe00529	M16-Fe00530
Eurofins mgt Sample No.			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	< 0.001	0.006	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.008	0.003	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.007	0.003	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.010	0.014	0.016
Zinc (filtered)	0.001	mg/L	0.008	0.010	0.004	0.011
Alkali Metals						
Calcium	0.5	mg/L	6.1	0.9	0.8	8.6
Magnesium	0.5	mg/L	1.4	16	3.0	4.0
Potassium	0.5	mg/L	0.6	< 0.5	< 0.5	1.0
Sodium	0.5	mg/L	8.0	62	19	45

Client Sample ID			MW7 Water	MW8 Water	MW24 Water	MW25 Water
Sample Matrix			M16-Fe00531	M16-Fe00532	M16-Fe00533	M16-Fe00534
Eurofins mgt Sample No.			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	13	59	25
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	150	100	650	220
pH						
pH	0.1	pH Units	5.8	6.3	4.3	4.6
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	100	^{Q19} 120	420	150
Hydroxide Alkalinity (as CaCO₃)						
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO₃)						
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Major Anions						
Bicarbonate Alkalinity (as CaCO₃)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO₃)						
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride						
Chloride	1	mg/L	17	12	170	16
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	3.1	5.4	0.03	24
Sulphate (as S)						
Sulphate (as S)	5	mg/L	9.6	< 5	23	8.5
Nitrogens (speciated)						
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	0.08	< 0.01	0.25	0.06
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	3.1	5.4	0.03	24
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	0.5	1.3	0.5	1.5
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	1.3	0.8	1.6
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	3.7	6.7	0.8	26

Client Sample ID			MW7 Water	MW8 Water	MW24 Water	MW25 Water
Sample Matrix			M16-Fe00531	M16-Fe00532	M16-Fe00533	M16-Fe00534
Eurofins mgt Sample No.			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.1	0.51	5.8	4.1
Aluminium (filtered)	0.05	mg/L	0.50	0.08	1.5	0.93
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	0.009	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	0.004	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	0.05	1.5	0.46
Iron (filtered)	0.05	mg/L	0.38	< 0.05	0.27	0.16
Lead	0.001	mg/L	< 0.001	< 0.001	0.009	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.004	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Selenium	0.001	mg/L	< 0.001	0.001	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.005	0.006	0.009
Zinc (filtered)	0.001	mg/L	0.004	0.004	0.005	0.005
Alkali Metals						
Calcium	0.5	mg/L	8.6	11	6.8	14
Magnesium	0.5	mg/L	2.4	1.2	16	7.8
Potassium	0.5	mg/L	1.8	< 0.5	1.9	2.7
Sodium	0.5	mg/L	7.0	6.6	98	16

Client Sample ID			MW26 Water	QC25 Water	QC26 Water
Sample Matrix			M16-Fe00535	M16-Fe00536	M16-Fe00537
Eurofins mgt Sample No.			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	37	-	-
Conductivity (at 25°C)	1	uS/cm	290	-	-
pH	0.1	pH Units	5.2	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 300	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-

Client Sample ID			MW26	QC25	QC26
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Fe00535	M16-Fe00536	M16-Fe00537
Date Sampled			Jan 29, 2016	Jan 29, 2016	Jan 29, 2016
Test/Reference	LOR	Unit			
Major Anions					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Chloride	1	mg/L	71	-	-
Nitrate (as N)	0.02	mg/L	0.03	-	-
Sulphate (as S)	5	mg/L	12	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.32	-	-
Nitrate (as N)	0.02	mg/L	0.03	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.9	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	-	-
Total Nitrogen (as N)	0.2	mg/L	1.2	-	-
Heavy Metals					
Aluminium	0.05	mg/L	1.7	-	-
Aluminium (filtered)	0.05	mg/L	1.5	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	-	-
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.76	-	-
Iron (filtered)	0.05	mg/L	0.67	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.014	-	-
Manganese (filtered)	0.005	mg/L	0.012	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	-	-
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	-	-
Zinc (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001
Alkali Metals					
Calcium	0.5	mg/L	7.0	-	-
Magnesium	0.5	mg/L	8.5	-	-
Potassium	0.5	mg/L	1.4	-	-
Sodium	0.5	mg/L	36	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 11, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 02, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 02, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 02, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 02, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 01, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 04, 2016	14 Day
Major Anions			
Bicarbonate Alkalinity (as CaCO ₃) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 02, 2016	14 Day
Carbonate Alkalinity (as CaCO ₃) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 02, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 02, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 02, 2016	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 02, 2016	28 Day
Nitrogens (speciated)			
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 04, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 04, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 04, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 04, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 01, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 01, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 01, 2016	28 Day
Major Cations			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 04, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 01, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA
Address: 89-91 Burswood Road
 Burswood
 WA 6100

Order No.:
Report #: 487310
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Feb 1, 2016 8:25 AM
Due: Feb 8, 2016
Priority: 5 Day
Contact Name: Richelle Bunbury

Project Name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA

Eurofins | mgt Client Manager: Natalie Krasselt

Sample Detail					Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Major Anions	Major Cations	Nitrogens (speciated)		
Laboratory where analysis is conducted																																						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217									X	X																												
Brisbane Laboratory - NATA Site # 20794																																						
External Laboratory																																						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																		
MW9	Jan 29, 2016		Water	M16-Fe00527	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW11	Jan 29, 2016		Water	M16-Fe00528	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
MW12	Jan 29, 2016		Water	M16-Fe00529	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW13	Jan 29, 2016		Water	M16-Fe00530	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW7	Jan 29, 2016		Water	M16-Fe00531	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW8	Jan 29, 2016		Water	M16-Fe00532	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW24	Jan 29, 2016		Water	M16-Fe00533	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW25	Jan 29, 2016		Water	M16-Fe00534	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW26	Jan 29, 2016		Water	M16-Fe00535	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Company Name: Coffey Environments Pty Ltd WA Address: 89-91 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 487310 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Feb 1, 2016 8:25 AM Due: Feb 8, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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 Eurofins | mgt Client Manager: **Natalie Krasselt**

Sample Detail					Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Major Anions	Major Cations	Nitrogens (speciated)		
Laboratory where analysis is conducted																																						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217									X	X																												
Brisbane Laboratory - NATA Site # 20794																																						
External Laboratory																																						
QC25	Jan 29, 2016		Water	M16-Fe00536		X	X		X	X				X	X	X	X	X	X	X	X	X	X	X					X		X							
QC26	Jan 29, 2016		Water	M16-Fe00537		X	X		X	X				X	X	X	X	X	X	X	X	X	X	X					X		X							

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Major Anions							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	107			70-130	Pass		
Phosphate total (as P)	%	93			70-130	Pass		
LCS - % Recovery								
Total Alkalinity (as CaCO ₃)	%	100			70-130	Pass		
LCS - % Recovery								
Major Anions								
Chloride	%	105			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Sulphate (as S)	%	94			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	105			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	115			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	91			80-120	Pass		
Arsenic (filtered)	%	91			80-120	Pass		
Cadmium	%	97			70-130	Pass		
Cadmium (filtered)	%	98			70-130	Pass		
Chromium	%	85			80-120	Pass		
Chromium (filtered)	%	85			80-120	Pass		
Copper	%	84			80-120	Pass		
Copper (filtered)	%	84			80-120	Pass		
Iron	%	95			80-120	Pass		
Iron (filtered)	%	95			80-120	Pass		
Lead	%	84			80-120	Pass		
Lead (filtered)	%	84			80-120	Pass		
Manganese	%	96			80-120	Pass		
Manganese (filtered)	%	96			80-120	Pass		
Mercury	%	91			75-125	Pass		
Mercury (filtered)	%	91			70-130	Pass		
Nickel	%	85			80-120	Pass		
Nickel (filtered)	%	85			80-120	Pass		
Selenium	%	99			80-120	Pass		
Selenium (filtered)	%	99			80-120	Pass		
Zinc	%	92			80-120	Pass		
Zinc (filtered)	%	92			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	99			70-130	Pass		
Magnesium	%	99			70-130	Pass		
Potassium	%	91			70-130	Pass		
Sodium	%	99			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe00527	CP	%	70		70-130	Pass	
Phosphorus reactive (as P)	M16-Fe00527	CP	%	100		70-130	Pass	
Spike - % Recovery								
Major Anions								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe01857	NCP	%	101		70-130	Pass	
Chloride	M16-Fe00527	CP	%	104		70-130	Pass	
Nitrate (as N)	B16-Fe00650	NCP	%	90		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sulphate (as S)	M16-Fe00527	CP	%	97			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	B16-Fe00650	NCP	%	97			70-130	Pass	
Nitrite (as N)	B16-Fe00650	NCP	%	103			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Fe00397	NCP	%	106			75-125	Pass	
Arsenic (filtered)	M16-Fe00393	NCP	%	100			70-130	Pass	
Cadmium	M16-Ja16791	NCP	%	84			70-130	Pass	
Cadmium (filtered)	S16-Fe02810	NCP	%	102			70-130	Pass	
Chromium	M16-Fe00397	NCP	%	103			75-125	Pass	
Chromium (filtered)	M16-Fe00393	NCP	%	95			70-130	Pass	
Copper	M16-Fe00397	NCP	%	102			75-125	Pass	
Copper (filtered)	M16-Fe00393	NCP	%	94			70-130	Pass	
Iron	M16-Fe00397	NCP	%	75			75-125	Pass	
Iron (filtered)	M16-Fe01054	NCP	%	90			70-130	Pass	
Lead	M16-Fe00397	NCP	%	100			75-125	Pass	
Lead (filtered)	M16-Fe00393	NCP	%	94			70-130	Pass	
Manganese	M16-Fe00397	NCP	%	104			75-125	Pass	
Manganese (filtered)	M16-Fe00393	NCP	%	90			70-130	Pass	
Mercury	M16-Fe00397	NCP	%	100			70-130	Pass	
Mercury (filtered)	M16-Fe00622	NCP	%	95			70-130	Pass	
Nickel	M16-Fe00397	NCP	%	101			75-125	Pass	
Nickel (filtered)	M16-Fe00393	NCP	%	94			70-130	Pass	
Selenium	M16-Fe00397	NCP	%	109			75-125	Pass	
Selenium (filtered)	M16-Fe00393	NCP	%	103			70-130	Pass	
Zinc	M16-Fe00397	NCP	%	100			75-125	Pass	
Zinc (filtered)	M16-Fe00393	NCP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Alkalinity (as CaCO3)	M16-Fe00528	CP	%	116			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe00531	CP	%	84			70-130	Pass	
Magnesium	M16-Fe00531	CP	%	93			70-130	Pass	
Potassium	M16-Fe00531	CP	%	83			70-130	Pass	
Sodium	M16-Fe00531	CP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
pH	M16-Fe00527	CP	pH Units	5.5	5.4	pass	30%	Pass	
Phosphate total (as P)	M16-Fe00527	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Fe00527	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Fe00166	NCP	mg/L	18000	18000	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Hydroxide Alkalinity (as CaCO3)	M16-Fe00527	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-Fe00527	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
Major Anions				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe00527	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe00527	CP	mg/L	< 10	< 10	<1	30%	Pass
Chloride	M16-Fe00527	CP	mg/L	19	17	14	30%	Pass
Nitrate (as N)	M16-Fe01630	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphate (as S)	M16-Fe00527	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Nitrite (as N)	M16-Fe01630	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Fe00527	CP	mg/L	0.3	0.4	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe00527	CP	mg/L	0.96	0.97	1.0	30%	Pass
Aluminium (filtered)	M16-Fe00393	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-Fe00397	NCP	mg/L	0.021	0.021	4.0	30%	Pass
Arsenic (filtered)	M16-Fe00393	NCP	mg/L	0.002	0.002	7.0	30%	Pass
Cadmium	M16-Ja16790	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Cadmium (filtered)	S16-Fe02809	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	M16-Fe00397	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Fe00393	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Fe00991	NCP	mg/L	0.21	0.19	9.0	30%	Pass
Copper (filtered)	M16-Fe00393	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Fe00397	NCP	mg/L	0.54	0.53	2.0	30%	Pass
Iron (filtered)	M16-Fe00622	NCP	mg/L	0.89	0.88	2.0	30%	Pass
Lead	M16-Fe00991	NCP	mg/L	0.005	0.004	6.0	30%	Pass
Lead (filtered)	M16-Fe00393	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Fe00397	NCP	mg/L	0.016	0.016	<1	30%	Pass
Manganese (filtered)	M16-Fe00393	NCP	mg/L	0.10	0.10	1.0	30%	Pass
Mercury	M16-Fe00397	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Fe00393	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Fe00397	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-Fe00393	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Fe00397	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Fe00393	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Fe00397	NCP	mg/L	0.020	0.020	<1	30%	Pass
Zinc (filtered)	M16-Fe00393	NCP	mg/L	0.017	0.017	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe00531	CP	mg/L	8.6	8.1	6.0	30%	Pass
Sodium	M16-Fe00531	CP	mg/L	7.0	6.8	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe00533	CP	mg/L	59	52	11	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **487551-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA MONITORING EVENT 2
Received Date Feb 02, 2016

Client Sample ID			MW34 Water	MW35 Water	MW15 Water	MW16 Water
Sample Matrix			M16-Fe01909	M16-Fe01910	M16-Fe01911	M16-Fe01912
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	33	48	20	36
Chloride	1	mg/L	80	59	45	72
Conductivity (at 25°C)	1	uS/cm	330	270	240	300
pH	0.1	pH Units	5.6	4.2	4.9	4.1
Phosphate total (as P)	0.05	mg/L	1.2	0.27	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.82	0.75	< 0.05	0.09
Sulphate (as S)	5	mg/L	< 5	5.7	17	14
Total Dissolved Solids	10	mg/L	^{Q19} 410	^{Q19} 340	160	190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.86	0.20	0.03
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.06	1.7
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.4	1.6	0.2	1.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.4	2.5	0.4	1.4
Total Nitrogen (as N)	0.2	mg/L	3.4	2.5	0.5	3.1
Heavy Metals						
Aluminium	0.05	mg/L	1.2	0.42	0.58	2.9
Aluminium (filtered)	0.05	mg/L	0.69	0.25	0.22	2.7
Arsenic	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.1	0.16	6.1	2.4
Iron (filtered)	0.05	mg/L	2.4	0.12	5.6	1.3
Lead	0.001	mg/L	0.001	< 0.001	0.001	0.009
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.008
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW34 Water	MW35 Water	MW15 Water	MW16 Water
Sample Matrix			M16-Fe01909	M16-Fe01910	M16-Fe01911	M16-Fe01912
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.009	0.010	0.004
Zinc (filtered)	0.001	mg/L	0.006	0.005	0.008	0.004
Alkali Metals						
Calcium	0.5	mg/L	9.7	10	5.0	12
Magnesium	0.5	mg/L	5.7	5.1	8.3	4.4
Potassium	0.5	mg/L	9.8	9.2	1.6	0.9
Sodium	0.5	mg/L	35	24	25	27

Client Sample ID			MW18 Water	MW27 Water	MW28 Water	MW29 Water
Sample Matrix			M16-Fe01913	M16-Fe01914	M16-Fe01915	M16-Fe01916
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	30	26	29	27
Chloride	1	mg/L	67	34	78	49
Conductivity (at 25°C)	1	uS/cm	310	180	310	290
pH	0.1	pH Units	4.6	4.4	4.4	5.0
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	6.4	9.5	17
Total Dissolved Solids	10	mg/L	190	^{Q19} 190	^{Q19} 320	^{Q19} 230
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.14	0.20	0.14	0.22
Nitrate (as N)	0.02	mg/L	0.07	0.02	2.1	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	0.12	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.7	1.0	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.9	1.1	0.6
Total Nitrogen (as N)	0.2	mg/L	0.4	0.9	3.3	0.6
Heavy Metals						
Aluminium	0.05	mg/L	3.6	0.64	0.70	2.6
Aluminium (filtered)	0.05	mg/L	0.75	0.62	0.62	0.72
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	< 0.001	< 0.001	0.005

Client Sample ID			MW18 Water	MW27 Water	MW28 Water	MW29 Water
Sample Matrix			M16-Fe01913	M16-Fe01914	M16-Fe01915	M16-Fe01916
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.001	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	5.5	0.44	0.11	0.74
Iron (filtered)	0.05	mg/L	5.5	0.30	0.08	0.34
Lead	0.001	mg/L	0.010	< 0.001	< 0.001	0.003
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.002	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.012	0.009	0.006	0.014
Zinc (filtered)	0.001	mg/L	0.012	0.007	0.002	0.006
Alkali Metals						
Calcium	0.5	mg/L	5.2	3.6	3.6	7.4
Magnesium	0.5	mg/L	4.3	5.1	8.1	10
Potassium	0.5	mg/L	1.2	2.6	3.2	1.8
Sodium	0.5	mg/L	34	16	39	29

Client Sample ID			MW30 Water	MW31 Water	MW32 Water	MW33 Water
Sample Matrix			M16-Fe01917	M16-Fe01918	M16-Fe01919	M16-Fe01920
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	18	15	15	< 10
Chloride	1	mg/L	25	69	160	65
Conductivity (at 25°C)	1	uS/cm	130	230	570	340
pH	0.1	pH Units	3.9	5.8	6.1	7.0
Phosphate total (as P)	0.05	mg/L	0.06	0.08	0.89	0.09
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.69	0.06
Sulphate (as S)	5	mg/L	< 5	< 5	8.4	< 5
Total Dissolved Solids	10	mg/L	85	170	^{Q19} 430	^{Q19} 260
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.23	0.42	0.43
Nitrate (as N)	0.02	mg/L	2.5	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.4	10	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.6	10	0.9
Total Nitrogen (as N)	0.2	mg/L	3.1	0.6	10	0.9

Client Sample ID			MW30 Water	MW31 Water	MW32 Water	MW33 Water
Sample Matrix			M16-Fe01917	M16-Fe01918	M16-Fe01919	M16-Fe01920
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016	Feb 01, 2016	Feb 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.1	11	0.52	0.71
Aluminium (filtered)	0.05	mg/L	0.46	0.54	0.41	0.24
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.007	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.27	0.53	0.24	0.26
Iron (filtered)	0.05	mg/L	0.07	0.26	0.20	0.11
Lead	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.012	0.017	0.013	0.006
Zinc (filtered)	0.001	mg/L	0.007	0.002	0.012	0.003
Alkali Metals						
Calcium	0.5	mg/L	4.1	2.1	10	23
Magnesium	0.5	mg/L	2.4	3.9	7.1	4.8
Potassium	0.5	mg/L	0.5	1.8	9.0	2.5
Sodium	0.5	mg/L	16	31	92	34

Client Sample ID			QC30 Water	QC31 Water
Sample Matrix			M16-Fe01921	M16-Fe01922
Eurofins mgt Sample No.			Feb 01, 2016	Feb 01, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium	0.05	mg/L	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001
Zinc	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 03, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 03, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 03, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 03, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 03, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 03, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 03, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 02, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 03, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 04, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 04, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 04, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 04, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 04, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 02, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 02, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 02, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 02, 2016	180 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	105			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	111			70-130	Pass		
Phosphate total (as P)	%	72			70-130	Pass		
Sulphate (as S)	%	97			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	99			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	88			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	93			80-120	Pass		
Arsenic	%	93			80-120	Pass		
Arsenic (filtered)	%	89			80-120	Pass		
Cadmium	%	97			70-130	Pass		
Chromium	%	91			80-120	Pass		
Chromium (filtered)	%	87			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	88			80-120	Pass		
Iron	%	84			80-120	Pass		
Iron (filtered)	%	86			80-120	Pass		
Lead	%	95			80-120	Pass		
Lead (filtered)	%	90			80-120	Pass		
Manganese	%	93			80-120	Pass		
Manganese (filtered)	%	89			80-120	Pass		
Mercury	%	95			75-125	Pass		
Mercury (filtered)	%	88			70-130	Pass		
Nickel	%	92			80-120	Pass		
Nickel (filtered)	%	88			80-120	Pass		
Selenium	%	94			80-120	Pass		
Selenium (filtered)	%	90			80-120	Pass		
Zinc	%	95			80-120	Pass		
Zinc (filtered)	%	89			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	107			70-130	Pass		
Potassium	%	95			70-130	Pass		
Sodium	%	95			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe01857	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Fe02379	NCP	%	89		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Fe02220	NCP	%	97		75-125	Pass	
Arsenic (filtered)	M16-Fe02186	NCP	%	97		70-130	Pass	
Cadmium	M16-Ja16791	NCP	%	84		70-130	Pass	
Chromium	M16-Fe02220	NCP	%	94		75-125	Pass	
Chromium (filtered)	M16-Fe02186	NCP	%	93		70-130	Pass	
Copper	M16-Fe02220	NCP	%	95		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper (filtered)	M16-Fe02186	NCP	%	89			70-130	Pass	
Iron (filtered)	M16-Fe02207	NCP	%	95			70-130	Pass	
Lead	M16-Fe02220	NCP	%	96			75-125	Pass	
Lead (filtered)	M16-Fe02186	NCP	%	91			70-130	Pass	
Manganese	M16-Fe02220	NCP	%	97			75-125	Pass	
Manganese (filtered)	M16-Fe02186	NCP	%	92			70-130	Pass	
Mercury	M16-Fe02220	NCP	%	96			70-130	Pass	
Mercury (filtered)	M16-Fe02186	NCP	%	98			70-130	Pass	
Nickel	M16-Fe02220	NCP	%	95			75-125	Pass	
Nickel (filtered)	M16-Fe02186	NCP	%	88			70-130	Pass	
Selenium	M16-Fe02220	NCP	%	97			75-125	Pass	
Selenium (filtered)	M16-Fe02186	NCP	%	105			70-130	Pass	
Zinc	M16-Fe02220	NCP	%	99			75-125	Pass	
Zinc (filtered)	M16-Fe02186	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M16-Fe02220	NCP	%	94			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe01911	CP	%	103			70-130	Pass	
Phosphorus reactive (as P)	M16-Fe01911	CP	%	104			70-130	Pass	
Sulphate (as S)	M16-Fe01911	CP	%	99			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe01911	CP	%	90			70-130	Pass	
Magnesium	M16-Fe01911	CP	%	89			70-130	Pass	
Potassium	M16-Fe01911	CP	%	85			70-130	Pass	
Sodium	M16-Fe01911	CP	%	88			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Fe01917	CP	%	96			70-130	Pass	
Nitrate (as N)	M16-Fe01917	CP	%	76			70-130	Pass	
Nitrite (as N)	M16-Fe01917	CP	%	102			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Fe01920	CP	%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Fe01909	CP	mg/L	33	31	6.0	30%	Pass	
Conductivity (at 25°C)	M16-Fe01909	CP	uS/cm	330	330	<1	30%	Pass	
pH	M16-Fe01909	CP	pH Units	5.6	5.5	pass	30%	Pass	
Total Dissolved Solids	M16-Fe02216	NCP	mg/L	1500	1400	5.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe01909	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Fe01909	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe01909	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Fe02220	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Fe02186	NCP	mg/L	0.061	0.063	4.0	30%	Pass	
Cadmium	M16-Ja16790	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Chromium	M16-Fe02220	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Chromium (filtered)	M16-Fe02186	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Fe00397	NCP	mg/L	0.005	0.005	5.0	30%	Pass
Copper (filtered)	M16-Fe02186	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Fe02207	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Fe00397	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Fe02186	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Fe02220	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Fe02186	NCP	mg/L	0.068	0.070	4.0	30%	Pass
Mercury	M16-Fe02220	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Fe02186	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Fe02220	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-Fe02186	NCP	mg/L	0.016	0.016	2.0	30%	Pass
Selenium	M16-Fe02220	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Fe02186	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Fe02220	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Fe02186	NCP	mg/L	0.011	0.012	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe01911	CP	mg/L	45	44	2.1	30%	Pass
Phosphorus reactive (as P)	M16-Fe01911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Fe01911	CP	mg/L	17	17	1.3	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe01911	CP	mg/L	0.58	0.55	5.0	30%	Pass
Iron	M16-Fe01911	CP	mg/L	6.1	6.1	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe01917	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate (as N)	M16-Fe01917	CP	mg/L	2.5	2.5	4.0	30%	Pass
Nitrite (as N)	M16-Fe01917	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe01918	CP	mg/L	0.54	0.52	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Fe01920	CP	mg/L	0.09	0.09	3.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Fe01920	CP	mg/L	0.9	0.9	1.9	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- EG020: It is recognised that total manganese is less than dissolved manganese for sample 'QC37'. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006: estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC29	QC37	----	----	----
Client sampling date / time				[03-Feb-2016]	[03-Feb-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600841-001	EP1600841-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	8.07	6.95	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2140	4000	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2330	2240	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	306	65	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	306	65	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	<1	15	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	61	98	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	587	1220	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	70	12	----	----	----	
Magnesium	7439-95-4	1	mg/L	44	75	----	----	----	
Sodium	7440-23-5	1	mg/L	285	573	----	----	----	
Potassium	7440-09-7	1	mg/L	7	19	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	1.34	0.06	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.010	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.016	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.009	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.033	<0.005	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.089	0.026	----	----	----	
Selenium	7782-49-2	0.01	mg/L	0.01	<0.01	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.58	0.29	----	----	----	
EG020T: Total Metals by ICP-MS									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC29	QC37	----	----	----
Client sampling date / time				[03-Feb-2016]	[03-Feb-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600841-001	EP1600841-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Aluminium	7429-90-5	0.01	mg/L	31.6	0.07	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.034	<0.001	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	0.0004	<0.0001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.074	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.010	<0.001	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.083	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.082	<0.001	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.084	<0.005	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.136	0.023	----	----	----	
Selenium	7782-49-2	0.01	mg/L	0.06	<0.01	----	----	----	
Iron	7439-89-6	0.05	mg/L	23.2	0.43	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.02	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.2	0.7	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	4.2	0.7	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.34	0.04	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	<0.01	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	23.9	37.8	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC29	QC37	----	----	----
Client sampling date / time				[03-Feb-2016]	[03-Feb-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1600841-001	EP1600841-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	19.7	32.2	----	----	----	
Ionic Balance	----	0.01	%	9.75	7.98	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	~310	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	~310	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1600841	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: Monitoring Event 2	Date Samples Received	: 03-Feb-2016
C-O-C number	: ----	Date Analysis Commenced	: 04-Feb-2016
Sampler	: ----	Issue Date	: 12-Feb-2016
Site	: ----	No. of samples received	: 2
Quote number	: ----	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 350414)									
EP1600837-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.52	7.53	0.133	0% - 20%
EP1600827-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.85	8.04	2.39	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 350412)									
EP1600827-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	655	648	1.07	0% - 20%
EP1600816-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	587	597	1.68	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 351048)									
EP1600841-002	QC37	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2240	2230	0.402	0% - 20%
EP1600836-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	74000	75400	1.78	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 350413)									
EP1600833-009	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	124	109	12.3	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	124	109	12.3	0% - 20%
EP1600816-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	69	68	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	69	68	0.00	0% - 20%
ED038A: Acidity (QC Lot: 355264)									
EP1600837-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	65	67	2.90	0% - 20%
EP1600846-005	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 350512)									
EP1600846-007	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	42	44	5.74	0% - 20%
EP1600833-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	573	562	1.92	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 350515)									
EP1600846-007	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	17	17	0.00	0% - 50%
EP1600833-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1240	1270	2.20	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 351643)									
EP1600867-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	516	514	0.427	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	69	69	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	109	110	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	758	768	1.22	0% - 20%
EP1600841-001	QC29	ED093F: Calcium	7440-70-2	1	mg/L	70	70	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	44	44	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	7	7	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
ED093F: Dissolved Major Cations (QC Lot: 351643) - continued											
EP1600841-001	QC29	ED093F: Sodium	7440-23-5	1	mg/L	285	284	0.492	0% - 20%		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 351640)											
EP1600781-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit		
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit		
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
EP1600799-005	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit		
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.00	No Limit		
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.029	0.030	4.96	0% - 20%		
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.00	No Limit		
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.030	0.030	0.00	0% - 20%		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.008	0.007	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.054	0.052	3.40	0% - 50%		
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.16	0.16	0.00	0% - 50%		
EP1600662-028	Anonymous	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.16	0.17	0.00	No Limit		
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit		
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.004	0.005	0.00	No Limit		
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.009	0.010	0.00	No Limit		
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.001	0.00	No Limit		
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.009	0.011	17.7	0% - 50%		
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit		
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.028	0.028	0.00	No Limit		
EP1600826-001	Anonymous	EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.65	0.70	7.47	0% - 20%		
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.68	0.74	8.08	0% - 50%		
		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit		
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	0.00	No Limit		
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	0.00	No Limit		
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.00	No Limit		
		EG020T: Total Metals by ICP-MS (QC Lot: 351611)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 351611) - continued									
EP1600826-001	Anonymous	EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.50	1.58	5.17	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.036	0.043	16.3	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.078	0.070	11.0	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.10	<0.10	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	27.9	30.9	10.0	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 351641)									
EP1600781-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1600841-001	QC29	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 351630)									
EP1600773-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1600883-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0010	<0.0010	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 354116)									
EP1600811-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.27	0.28	0.00	0% - 20%
EP1600846-006	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.40	0.40	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 350513)									
EP1600846-007	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	0.00	No Limit
EP1600833-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.29	0.29	0.00	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 354117)									
EP1600811-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	5.42	5.54	2.08	0% - 20%
EP1600846-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.11	0.11	0.00	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 351635)									
EP1600743-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	8.2	8.5	4.54	0% - 50%
EP1600801-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	21.9	20.6	6.01	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 351633)									
EP1600743-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.89	2.89	0.00	0% - 20%
EP1600801-007	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	6.85	6.38	7.02	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 350514)									
EP1600846-007	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1600833-009	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 350414)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 350412)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.3	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 351048)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.4	83	111	
				<10	293 mg/L	100	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 350413)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	93.3	90	106	
ED038A: Acidity (QCLot: 355264)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	110	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 350512)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	89	113	
				<1	100 mg/L	121	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 350515)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	100	84	120	
				<1	1000 mg/L	103	84	110	
ED093F: Dissolved Major Cations (QCLot: 351643)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	101	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	95.5	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.8	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.2	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 351640)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	84	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	84	112	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 351640) - continued								
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	102	85	107
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	105	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.4	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.6	89	115
EG020T: Total Metals by ICP-MS (QCLot: 351611)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	88.2	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	91.9	83	107
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.9	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	86.9	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.4	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	91.0	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.6	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	91.0	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	88.2	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	93.8	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	87.0	81	103
EG035F: Dissolved Mercury by FIMS (QCLot: 351641)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.5	92	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 351630)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.2	87	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 354116)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 350513)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	88.7	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 354117)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 351635)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	83.6	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 351633)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	91.3	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 350514)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	96.7	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 350512)							
EP1600833-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 350515)							
EP1600833-008	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	104	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 351640)							
EP1600781-014	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	104	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	98.8	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	97.0	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	99.9	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	100	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	102	70	130
EG020A-F: Zinc	7440-66-6	0.2 mg/L	102	70	130		
EG020T: Total Metals by ICP-MS (QCLot: 351611)							
EP1600662-029	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.2	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	101	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	96.0	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	95.8	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	92.5	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	102	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	96.4	70	130
EG020A-T: Zinc	7440-66-6	1 mg/L	95.5	70	130		
EG035F: Dissolved Mercury by FIMS (QCLot: 351641)							
EP1600781-013	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	84.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 351630)							
EP1600841-001	QC29	EG035T: Mercury	7439-97-6	0.01 mg/L	82.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 354116)							
EP1600811-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	84.5	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 350513)							
EP1600833-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	119	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 354117)							
EP1600811-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 351635)							
EP1600743-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	87.5	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 351633)							



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 351633) - continued							
EP1600743-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	111	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 350514)							
EP1600833-008	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	111	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1600841	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 03-Feb-2016
Site	: ----	Issue Date	: 12-Feb-2016
Sampler	: ----	No. of samples received	: 2
Order number	: Monitoring Event 2	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EP1600833--008	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1600811--001	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved	QC29, QC37	----	----	----	04-Feb-2016	03-Feb-2016	1

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P)	03-Feb-2016	QC29, QC37	----	----	----	04-Feb-2016	03-Feb-2016	✘
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P)	03-Feb-2016	QC29, QC37	----	----	----	04-Feb-2016	02-Mar-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H)	03-Feb-2016	QC29, QC37	----	----	----	05-Feb-2016	10-Feb-2016	✔
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P)	03-Feb-2016	QC29, QC37	----	----	----	04-Feb-2016	17-Feb-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED038A: Acidity								
Miscellaneous Plastic bottle -unpreserved (ED038) QC29, QC37	03-Feb-2016	----	----	----	10-Feb-2016	17-Feb-2016	✓	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC29, QC37	03-Feb-2016	----	----	----	04-Feb-2016	02-Mar-2016	✓	
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC29, QC37	03-Feb-2016	----	----	----	04-Feb-2016	02-Mar-2016	✓	
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC29, QC37	03-Feb-2016	----	----	----	09-Feb-2016	02-Mar-2016	✓	
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC29, QC37	03-Feb-2016	----	----	----	09-Feb-2016	01-Aug-2016	✓	
EG020T: Total Metals by ICP-MS								
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC29, QC37	03-Feb-2016	09-Feb-2016	01-Aug-2016	✓	09-Feb-2016	01-Aug-2016	✓	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC29, QC37	03-Feb-2016	----	----	----	09-Feb-2016	02-Mar-2016	✓	
EG035T: Total Recoverable Mercury by FIMS								
Miscellaneous Nitric preserved - unfiltered (EG035T) QC29, QC37	03-Feb-2016	----	----	----	09-Feb-2016	02-Mar-2016	✓	
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC29, QC37	03-Feb-2016	----	----	----	11-Feb-2016	02-Mar-2016	✓	
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC29, QC37	03-Feb-2016	----	----	----	04-Feb-2016	05-Feb-2016	✓	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC29, QC37	03-Feb-2016	----	----	----	11-Feb-2016	02-Mar-2016	✓	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC29, QC37	03-Feb-2016	08-Feb-2016	02-Mar-2016	✓	09-Feb-2016	02-Mar-2016	✓	
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC29, QC37	03-Feb-2016	08-Feb-2016	02-Mar-2016	✓	09-Feb-2016	02-Mar-2016	✓	

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 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method <i>Container / Client Sample ID(s)</i>	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC29, QC37	03-Feb-2016	----	----	----	04-Feb-2016	05-Feb-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC37	03-Feb-2016	----	----	----	04-Feb-2016	04-Feb-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO ₄ DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007

Preparation Methods	Method	Matrix	Method Descriptions
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<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **487605-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 03, 2016

Client Sample ID			MW48 Water	MW49 Water	MW50 Water	MW51 Water
Sample Matrix			M16-Fe02264	M16-Fe02379	M16-Fe02380	M16-Fe02381
Eurofins mgt Sample No.			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	23	31	20	13
Chloride	1	mg/L	920	1600	3000	810
Conductivity (at 25°C)	1	uS/cm	2900	5100	8500	2500
pH	0.1	pH Units	4.8	5.8	6.6	6.3
Phosphate total (as P)	0.05	mg/L	< 0.05	0.05	0.32	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	40	74	57	34
Total Dissolved Solids	10	mg/L	1700	3200	4900	1600
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	28	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	28	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.03	0.22	0.17
Nitrate (as N)	0.02	mg/L	0.15	< 0.02	0.12	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.2	0.2
Total Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	0.3	0.2
Heavy Metals						
Aluminium	0.05	mg/L	2.4	34	56	0.41
Aluminium (filtered)	0.05	mg/L	0.21	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	0.008	0.019	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.0016	^{G01} < 0.0002	0.00068	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00068	0.00013	0.00041	< 0.00005
Chromium	0.001	mg/L	0.001	0.055	0.14	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.15	0.039	0.002
Copper (filtered)	0.001	mg/L	0.001	0.003	< 0.001	< 0.001
Iron	0.05	mg/L	1.3	16	18	2.7
Iron (filtered)	0.05	mg/L	0.33	2.1	< 0.05	< 0.05
Lead	0.001	mg/L	0.018	0.35	0.40	0.001
Lead (filtered)	0.001	mg/L	0.010	0.026	0.001	< 0.001

Client Sample ID			MW48 Water	MW49 Water	MW50 Water	MW51 Water
Sample Matrix			M16-Fe02264	M16-Fe02379	M16-Fe02380	M16-Fe02381
Eurofins mgt Sample No.			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.028	0.044	0.028	0.030
Manganese (filtered)	0.005	mg/L	0.026	0.040	0.026	0.029
Mercury	0.0001	mg/L	< 0.0001	0.0007	0.0015	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.008	0.011	0.012	0.005
Nickel (filtered)	0.001	mg/L	0.008	0.006	0.004	0.004
Selenium	0.001	mg/L	< 0.001	0.007	0.016	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.014	0.038	0.067	0.022
Zinc (filtered)	0.001	mg/L	0.013	0.033	0.036	0.019
Alkali Metals						
Calcium	0.5	mg/L	13	28	31	13
Magnesium	0.5	mg/L	64	140	170	57
Potassium	0.5	mg/L	8.6	13	34	7.2
Sodium	0.5	mg/L	440	750	1500	410

Client Sample ID			MW52 Water	MW53 Water	MW54 Water	QC32 Water
Sample Matrix			M16-Fe02382	M16-Fe02383	M16-Fe02384	M16-Fe02385
Eurofins mgt Sample No.			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	15	12	< 10	-
Chloride	1	mg/L	13000	2300	290	-
Conductivity (at 25°C)	1	uS/cm	37000	6800	1100	-
pH	0.1	pH Units	8.1	5.0	8.0	-
Phosphate total (as P)	0.05	mg/L	< 0.05	0.09	0.39	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	470	81	11	-
Total Dissolved Solids	10	mg/L	25000	3700	690	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	210	< 20	100	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	210	< 20	100	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.06	0.03	-
Nitrate (as N)	0.02	mg/L	43	< 0.02	< 0.02	-
Nitrite (as N)	0.02	mg/L	0.25	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.7	0.2	< 0.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	0.3	< 0.2	-
Total Nitrogen (as N)	0.2	mg/L	45	0.3	< 0.2	-
Heavy Metals						
Aluminium	0.05	mg/L	< 0.25	1.2	4.4	-
Aluminium (filtered)	0.05	mg/L	< 0.25	< 0.05	0.28	0.46
Arsenic	0.001	mg/L	0.010	0.002	0.010	-
Arsenic (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00023	< 0.00005	< 0.00005	-

Client Sample ID			MW52 Water	MW53 Water	MW54 Water	QC32 Water
Sample Matrix			M16-Fe02382	M16-Fe02383	M16-Fe02384	M16-Fe02385
Eurofins mgt Sample No.			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	0.00023	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.005	< 0.001	0.008	-
Chromium (filtered)	0.001	mg/L	< 0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.005	< 0.001	0.003	-
Copper (filtered)	0.001	mg/L	< 0.005	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.25	3.6	48	-
Iron (filtered)	0.05	mg/L	< 0.25	0.74	0.08	< 0.05
Lead	0.001	mg/L	< 0.005	0.004	0.041	-
Lead (filtered)	0.001	mg/L	< 0.005	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.082	0.045	0.061	-
Manganese (filtered)	0.005	mg/L	0.030	0.045	0.035	< 0.005
Mercury	0.0001	mg/L	< 0.0005	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0005	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.025	0.004	0.006	-
Nickel (filtered)	0.001	mg/L	0.015	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	0.014	< 0.001	0.003	-
Selenium (filtered)	0.001	mg/L	0.012	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.043	0.008	0.019	-
Zinc (filtered)	0.001	mg/L	0.019	0.003	< 0.001	0.002
Alkali Metals						
Calcium	0.5	mg/L	260	42	51	-
Magnesium	0.5	mg/L	1100	180	19	-
Potassium	0.5	mg/L	160	16	7.1	-
Sodium	0.5	mg/L	6400	990	130	-

Client Sample ID			QC33 Water	MW36 Water	MW37 Water	MW38 Water
Sample Matrix			M16-Fe02386	M16-Fe02387	M16-Fe02388	M16-Fe02389
Eurofins mgt Sample No.			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Acidity (as CaCO ₃)	10	mg/L	-	< 10	< 10	34
Chloride	1	mg/L	-	15	23	160
Conductivity (at 25°C)	1	uS/cm	-	140	120	620
pH	0.1	pH Units	-	7.2	6.8	6.5
Phosphate total (as P)	0.05	mg/L	-	0.14	0.33	0.68
Phosphorus reactive (as P)	0.05	mg/L	-	0.12	0.28	0.38
Sulphate (as S)	5	mg/L	-	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	-	^{Q19} 120	^{Q19} 120	^{Q19} 450
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	23	< 20	53
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	23	< 20	53

Client Sample ID			QC33	MW36	MW37	MW38
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe02386	M16-Fe02387	M16-Fe02388	M16-Fe02389
Date Sampled			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.06	0.23	0.77
Nitrate (as N)	0.02	mg/L	-	3.4	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	-	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	< 0.2	0.5	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	< 0.2	0.7	1.9
Total Nitrogen (as N)	0.2	mg/L	-	3.4	0.7	1.9
Heavy Metals						
Aluminium	0.05	mg/L	-	0.09	0.26	49
Aluminium (filtered)	0.05	mg/L	0.38	0.06	0.21	0.47
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	0.011
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	< 0.001	< 0.001	0.019
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.001	0.001	0.012
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	< 0.05	0.07	34
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.06	0.44
Lead	0.001	mg/L	-	< 0.001	< 0.001	0.036
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Manganese	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	0.0005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	< 0.001	< 0.001	0.023
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	-	< 0.001	< 0.001	0.007
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	0.005	0.007	0.035
Zinc (filtered)	0.001	mg/L	0.002	0.005	0.004	0.004
Alkali Metals						
Calcium	0.5	mg/L	-	15	8.1	28
Magnesium	0.5	mg/L	-	1.8	2.1	12
Potassium	0.5	mg/L	-	< 0.5	1.5	17
Sodium	0.5	mg/L	-	7.9	12	69

Client Sample ID			MW39	MW42	SW4_1	SW4_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe02390	M16-Fe02391	M16-Fe02392	M16-Fe02393
Date Sampled			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	25	< 10	10
Chloride	1	mg/L	76	50	190	190
Conductivity (at 25°C)	1	uS/cm	390	160	700	680
pH	0.1	pH Units	7.7	4.3	6.9	6.8
Phosphate total (as P)	0.05	mg/L	1.1	< 0.05	1.3	1.3

Client Sample ID			MW39	MW42	SW4_1	SW4_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe02390	M16-Fe02391	M16-Fe02392	M16-Fe02393
Date Sampled			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Test/Reference	LOR	Unit				
Phosphorus reactive (as P)	0.05	mg/L	0.98	< 0.05	0.98	0.97
Sulphate (as S)	5	mg/L	< 5	< 5	7.0	7.0
Total Dissolved Solids	10	mg/L	^{Q19} 240	^{Q19} 190	^{Q19} 640	^{Q19} 630
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	65	< 20	32	31
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	65	< 20	32	31
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.4	0.27	1.3	1.3
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.6	3.3	3.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.0	0.9	4.6	4.8
Total Nitrogen (as N)	0.2	mg/L	2.0	0.9	4.6	4.8
Heavy Metals						
Aluminium	0.05	mg/L	0.09	0.69	0.52	0.74
Aluminium (filtered)	0.05	mg/L	0.06	0.39	0.37	0.38
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.003	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.16	0.57	0.68
Iron (filtered)	0.05	mg/L	< 0.05	0.13	0.32	0.33
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.011	< 0.005	0.051	0.055
Manganese (filtered)	0.005	mg/L	0.010	< 0.005	0.038	0.037
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.034	0.002	0.012	0.018
Zinc (filtered)	0.001	mg/L	0.013	0.002	0.004	0.004
Alkali Metals						
Calcium	0.5	mg/L	17	1.4	19	22
Magnesium	0.5	mg/L	6.8	3.9	13	15
Potassium	0.5	mg/L	15	0.9	29	32
Sodium	0.5	mg/L	38	26	74	82
Pathogens						
E.coli	1	MPN/100mL	-	-	5400	3500
Thermotolerant Coliforms	1	MPN/100mL	-	-	5400	5400

Client Sample ID			SW4_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Fe02394	M16-Fe02395	M16-Fe02396
Date Sampled			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Chloride	1	mg/L	190	240	69
Conductivity (at 25°C)	1	uS/cm	700	960	370
pH	0.1	pH Units	6.8	7.4	7.6
Phosphate total (as P)	0.05	mg/L	1.3	1.8	0.88
Phosphorus reactive (as P)	0.05	mg/L	0.98	1.8	0.63
Sulphate (as S)	5	mg/L	7.0	23	12
Total Dissolved Solids	10	mg/L	^{Q19} 630	^{Q19} 770	250
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	31	55	48
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	31	55	48
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	1.2	0.13	0.22
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.5	2.7	1.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.7	2.8	1.7
Total Nitrogen (as N)	0.2	mg/L	4.7	2.8	1.7
Heavy Metals					
Aluminium	0.05	mg/L	0.57	0.29	0.31
Aluminium (filtered)	0.05	mg/L	0.35	0.27	0.13
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	^{G01} < 0.0001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	^{G01} < 0.0001
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.59	0.38	0.53
Iron (filtered)	0.05	mg/L	0.33	0.36	0.20
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.051	0.009	0.010
Manganese (filtered)	0.005	mg/L	0.032	0.009	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.011	0.003	0.017
Zinc (filtered)	0.001	mg/L	0.003	0.002	0.012
Alkali Metals					
Calcium	0.5	mg/L	19	34	19
Magnesium	0.5	mg/L	14	18	7.2
Potassium	0.5	mg/L	29	26	16
Sodium	0.5	mg/L	75	110	35

Client Sample ID			SW4_3	SW3_1	SW3_2
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Fe02394	M16-Fe02395	M16-Fe02396
Date Sampled			Feb 02, 2016	Feb 02, 2016	Feb 02, 2016
Test/Reference	LOR	Unit			
Pathogens					
E.coli	1	MPN/100mL	1100	230	>16000
Thermotolerant Coliforms	1	MPN/100mL	5400	490	>16000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 03, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 04, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 03, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 03, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 03, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 04, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 04, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 03, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 05, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 05, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 05, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 05, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 05, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 05, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 03, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 03, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 03, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 03, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 03, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 03, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	104			70-130	Pass		
Chloride	%	97			70-130	Pass		
Phosphate total (as P)	%	102			70-130	Pass		
Sulphate (as S)	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	%	99			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	100			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	82			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	91			80-120	Pass		
Aluminium (filtered)	%	91			80-120	Pass		
Arsenic	%	89			80-120	Pass		
Arsenic (filtered)	%	89			80-120	Pass		
Cadmium	%	87			70-130	Pass		
Cadmium (filtered)	%	92			70-130	Pass		
Chromium	%	96			80-120	Pass		
Chromium (filtered)	%	96			80-120	Pass		
Copper	%	86			80-120	Pass		
Copper (filtered)	%	86			80-120	Pass		
Iron	%	98			80-120	Pass		
Iron (filtered)	%	98			80-120	Pass		
Lead	%	95			80-120	Pass		
Lead (filtered)	%	95			80-120	Pass		
Manganese	%	97			80-120	Pass		
Manganese (filtered)	%	97			80-120	Pass		
Mercury	%	83			75-125	Pass		
Mercury (filtered)	%	83			70-130	Pass		
Nickel	%	97			80-120	Pass		
Nickel (filtered)	%	97			80-120	Pass		
Selenium	%	90			80-120	Pass		
Selenium (filtered)	%	90			80-120	Pass		
Zinc	%	105			80-120	Pass		
Zinc (filtered)	%	105			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	107			70-130	Pass		
Magnesium	%	108			70-130	Pass		
Potassium	%	96			70-130	Pass		
Sodium	%	109			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Fe02264	CP	%	106		70-130	Pass	
Sulphate (as S)	M16-Fe02264	CP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Fe02016	NCP	%	102		75-125	Pass	
Arsenic (filtered)	M16-Fe01772	NCP	%	95		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Chromium	M16-Fe02016	NCP	%	97		75-125	Pass	
Chromium (filtered)	M16-Fe01772	NCP	%	93		70-130	Pass	
Copper	M16-Fe02016	NCP	%	96		75-125	Pass	
Copper (filtered)	M16-Fe01772	NCP	%	90		70-130	Pass	
Iron	B16-Fe02632	NCP	%	88		75-125	Pass	
Iron (filtered)	M16-Fe01772	NCP	%	93		70-130	Pass	
Lead	M16-Fe02016	NCP	%	94		75-125	Pass	
Lead (filtered)	M16-Fe01772	NCP	%	90		70-130	Pass	
Manganese	B16-Fe02632	NCP	%	89		75-125	Pass	
Manganese (filtered)	M16-Fe01772	NCP	%	94		70-130	Pass	
Mercury	M16-Fe02016	NCP	%	100		70-130	Pass	
Mercury (filtered)	M16-Fe01772	NCP	%	88		70-130	Pass	
Nickel	M16-Fe02016	NCP	%	95		75-125	Pass	
Nickel (filtered)	M16-Fe01772	NCP	%	90		70-130	Pass	
Selenium	M16-Fe02016	NCP	%	101		75-125	Pass	
Selenium (filtered)	M16-Fe01772	NCP	%	94		70-130	Pass	
Zinc (filtered)	M16-Fe02264	CP	%	108		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe02379	CP	%	115		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe02379	CP	%	71		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Fe02379	CP	%	119		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Fe02379	CP	%	89		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Fe02388	CP	%	99		70-130	Pass	
Phosphorus reactive (as P)	M16-Fe02388	CP	%	107		70-130	Pass	
Sulphate (as S)	M16-Fe02388	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Zinc (filtered)	M16-Fe02388	CP	%	109		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Fe02389	CP	%	85		70-130	Pass	
Zinc	M16-Fe02389	CP	%	101		75-125	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Fe02390	CP	%	94		70-130	Pass	
Nitrate (as N)	M16-Fe02390	CP	%	99		70-130	Pass	
Nitrite (as N)	M16-Fe02390	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Fe02393	CP	%	97		70-130	Pass	
Sulphate (as S)	M16-Fe02393	CP	%	99		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Fe02395	CP	%	108		70-130	Pass	
Magnesium	M16-Fe02395	CP	%	105		70-130	Pass	
Potassium	M16-Fe02395	CP	%	96		70-130	Pass	
Sodium	M16-Fe02395	CP	%	107		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium (filtered)	M16-Fe02396	CP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Fe02264	CP	mg/L	920	920	<1	30%	Pass	
Conductivity (at 25°C)	M16-Fe02264	CP	uS/cm	2900	3000	4.0	30%	Pass	
pH	M16-Fe02264	CP	pH Units	4.8	4.8	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Fe02264	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Fe02264	CP	mg/L	40	41	1.5	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe02264	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Fe02264	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe02264	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Fe02264	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Fe02264	CP	mg/L	0.21	0.22	<1	30%	Pass	
Arsenic	M16-Fe02016	NCP	mg/L	0.002	0.002	8.0	30%	Pass	
Arsenic (filtered)	M16-Fe01772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Fe02264	CP	mg/L	0.0016	0.0016	<1	30%	Pass	
Chromium	M16-Fe02016	NCP	mg/L	0.007	0.007	12	30%	Pass	
Chromium (filtered)	M16-Fe01772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Fe02016	NCP	mg/L	0.002	0.002	11	30%	Pass	
Copper (filtered)	M16-Fe01772	NCP	mg/L	0.004	0.004	<1	30%	Pass	
Iron (filtered)	M16-Fe01772	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Fe02016	NCP	mg/L	0.013	0.011	19	30%	Pass	
Lead (filtered)	M16-Fe01772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Fe02016	NCP	mg/L	0.71	0.71	<1	30%	Pass	
Manganese (filtered)	M16-Fe01772	NCP	mg/L	0.009	0.009	<1	30%	Pass	
Mercury	M16-Fe02016	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Fe01772	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Fe02016	NCP	mg/L	0.005	0.005	10	30%	Pass	
Nickel (filtered)	M16-Fe01772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Fe02016	NCP	mg/L	0.001	0.001	28	30%	Pass	
Selenium (filtered)	M16-Fe01772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Fe02264	CP	mg/L	0.013	0.014	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Fe02379	CP	mg/L	0.05	0.05	5.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Fe02379	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Fe02380	CP	mg/L	20	19	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Fe02381	CP	mg/L	1600	1600	2.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe02388	CP	mg/L	23	23	1.3	30%	Pass
Phosphorus reactive (as P)	M16-Fe02388	CP	mg/L	0.28	0.28	1.0	30%	Pass
Sulphate (as S)	M16-Fe02388	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe02388	CP	mg/L	0.21	0.17	21	30%	Pass
Cadmium	M16-Fe02388	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Zinc (filtered)	M16-Fe02388	CP	mg/L	0.004	0.004	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe02389	CP	mg/L	49	50	2.0	30%	Pass
Iron	M16-Fe02389	CP	mg/L	34	35	2.0	30%	Pass
Zinc	M16-Fe02389	CP	mg/L	0.035	0.035	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe02390	CP	mg/L	1.4	1.4	<1	30%	Pass
Nitrate (as N)	M16-Fe02390	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Fe02390	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe02391	CP	mg/L	25	24	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe02393	CP	mg/L	190	180	1.5	30%	Pass
Conductivity (at 25°C)	M16-Fe02393	CP	uS/cm	680	600	1.0	30%	Pass
pH	M16-Fe02393	CP	pH Units	6.8	6.8	pass	30%	Pass
Phosphorus reactive (as P)	M16-Fe02393	CP	mg/L	0.97	0.98	<1	30%	Pass
Sulphate (as S)	M16-Fe02393	CP	mg/L	7.0	7.5	6.5	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe02393	CP	mg/L	31	29	5.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe02393	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe02393	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Fe02393	CP	mg/L	31	29	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe02395	CP	mg/L	34	36	5.0	30%	Pass
Magnesium	M16-Fe02395	CP	mg/L	18	19	5.0	30%	Pass
Potassium	M16-Fe02395	CP	mg/L	26	27	4.0	30%	Pass
Sodium	M16-Fe02395	CP	mg/L	110	110	6.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Fe02396	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

Coffey Environments Pty Ltd WA
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Attention: **Richelle Bunbury**

Report **487822-W**
 Project name NL_BASELINE GW_SW MONITORING
 Project ID ENAUPERT04483AA MONITORING EVENT 2
 Received Date Feb 04, 2016

Client Sample ID			MW43	MW44	MW45	MW46
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03657	M16-Fe03658	M16-Fe03659	M16-Fe03660
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	37	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	1.1	0.21	0.24	0.47
Chloride	1	mg/L	1300	360	470	820
Conductivity (at 25°C)	1	uS/cm	4100	1500	1800	2600
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.7	8.0	8.5	8.6
Phosphate total (as P)	0.05	mg/L	0.12	0.15	0.14	0.16
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
Sulphate (as S)	5	mg/L	16	< 5	8.6	5.9
Total Dissolved Solids	10	mg/L	^{Q19} 3200	1000	990	1700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	7.6	< 0.2	1.6	2.2
Total Nitrogen (as N)	0.2	mg/L	7.6	< 0.2	1.6	2.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	130	220	200	220
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	13	20
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	130	220	220	240
Heavy Metals						
Aluminium	0.05	mg/L	1.7	18	2.6	5.0
Aluminium (filtered)	0.05	mg/L	0.92	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.004	0.014	0.007	0.005
Arsenic (filtered)	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00010
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.010	0.028	0.007	0.012
Chromium (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.006	0.002	0.017
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.45	14	7.6	11
Iron (filtered)	0.05	mg/L	0.11	0.18	< 0.05	0.18
Lead	0.001	mg/L	0.002	0.041	0.006	0.014
Lead (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.017	0.007	0.042

Client Sample ID			MW43 Water	MW44 Water	MW45 Water	MW46 Water
Sample Matrix			M16-Fe03657	M16-Fe03658	M16-Fe03659	M16-Fe03660
Eurofins mgt Sample No.			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.008	0.012	< 0.005	0.014
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.010	0.007	0.014
Nickel (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	0.004	0.018	0.005	0.006
Selenium (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.014	0.008	0.033
Zinc (filtered)	0.001	mg/L	0.004	0.003	0.005	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	63	27	65	110
Magnesium	0.5	mg/L	100	25	35	63
Potassium	0.5	mg/L	6.2	4.0	4.5	5.6
Sodium	0.5	mg/L	540	230	210	340

Client Sample ID			MW47 Water	MW40 Water	MW41 Water	SW6R1-1 Water
Sample Matrix			M16-Fe03661	M16-Fe03662	M16-Fe03663	M16-Fe03664
Eurofins mgt Sample No.			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	20	150	37
Ammonia (as N)	0.01	mg/L	0.10	0.34	0.59	< 0.01
Chloride	1	mg/L	560	73	220	69
Conductivity (at 25°C)	1	uS/cm	2100	230	990	280
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	8.4	5.0	3.1	4.0
Phosphate total (as P)	0.05	mg/L	0.28	0.09	0.42	0.15
Phosphorus reactive (as P)	0.05	mg/L	0.06	0.06	0.53	0.16
Sulphate (as S)	5	mg/L	12	< 5	23	< 5
Total Dissolved Solids	10	mg/L	1200	^{Q19} 190	^{Q19} 850	^{Q19} 250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	0.7	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	0.7	< 0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	210	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	220	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	21	0.84	2.0	0.59
Aluminium (filtered)	0.05	mg/L	< 0.05	0.68	2.0	0.33
Arsenic	0.001	mg/L	0.021	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.008	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00057	< 0.00005	0.00013	< 0.0005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00019	0.00005
Chromium	0.001	mg/L	0.042	< 0.001	0.002	< 0.001

Client Sample ID			MW47	MW40	MW41	SW6R1-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03661	M16-Fe03662	M16-Fe03663	M16-Fe03664
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.006	0.001	0.003	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Iron	0.05	mg/L	19	0.26	0.81	0.29
Iron (filtered)	0.05	mg/L	< 0.05	0.22	0.77	0.20
Lead	0.001	mg/L	0.041	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	0.061	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.023	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.033	< 0.001	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	0.004	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.012	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	0.005	< 0.001	0.002	< 0.001
Zinc	0.001	mg/L	0.027	0.005	0.012	0.007
Zinc (filtered)	0.001	mg/L	0.005	0.003	0.012	0.006
Alkali Metals						
Calcium	0.5	mg/L	66	1.4	5.6	2.0
Magnesium	0.5	mg/L	39	4.2	13	5.9
Potassium	0.5	mg/L	4.9	1.9	1.3	1.3
Sodium	0.5	mg/L	290	34	110	33
Pathogens						
E.coli	1	MPN/100mL	-	-	-	M15<10
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	<10

Client Sample ID			SW6R1-2	SW6R1-3	SWEB-1	SWEB-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03665	M16-Fe03666	M16-Fe03667	M16-Fe03668
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	36	33	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	0.07	0.07
Chloride	1	mg/L	68	64	1900	1900
Conductivity (at 25°C)	1	uS/cm	290	270	5800	6000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	3.9	4.0	8.3	8.3
Phosphate total (as P)	0.05	mg/L	0.13	0.15	0.43	0.45
Phosphorus reactive (as P)	0.05	mg/L	0.07	0.08	0.10	0.10
Sulphate (as S)	5	mg/L	5.2	< 5	16	16
Total Dissolved Solids	10	mg/L	Q19<250	Q19<250	3300	3300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			SW6R1-2	SW6R1-3	SWEB-1	SWEB-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03665	M16-Fe03666	M16-Fe03667	M16-Fe03668
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	150	150
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	150	160
Heavy Metals						
Aluminium	0.05	mg/L	0.45	0.56	< 0.05	0.09
Aluminium (filtered)	0.05	mg/L	0.40	0.45	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Cadmium	0.00005	mg/L	< 0.0005	< 0.0005	< 0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	0.00005	0.00006	< 0.00005	< 0.0001
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.25	0.29	1.7	1.7
Iron (filtered)	0.05	mg/L	0.21	0.18	0.84	0.78
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.088	0.087
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.071	0.080
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.031	0.005	0.012
Zinc (filtered)	0.001	mg/L	0.007	0.020	0.005	0.002
Alkali Metals						
Calcium	0.5	mg/L	1.6	1.7	50	49
Magnesium	0.5	mg/L	5.9	5.9	120	130
Potassium	0.5	mg/L	1.2	1.2	22	22
Sodium	0.5	mg/L	33	33	860	850
Pathogens						
E.coli	1	MPN/100mL	<10	<10	130	140
Thermotolerant Coliforms	1	MPN/100mL	20	490	3500	5400

Client Sample ID			SWEB-3	QC28	QC35	QC38
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03669	M16-Fe03670	M16-Fe03671	M16-Fe03672
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Ammonia (as N)	0.01	mg/L	0.04	0.22	0.44	-
Chloride	1	mg/L	1900	470	790	-
Conductivity (at 25°C)	1	uS/cm	5700	1800	2400	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
pH	0.1	pH Units	8.4	8.5	8.5	-
Phosphate total (as P)	0.05	mg/L	0.48	0.23	0.14	-
Phosphorus reactive (as P)	0.05	mg/L	0.21	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	15	9.1	5.9	-
Total Dissolved Solids	10	mg/L	3300	1000	^{Q191} 1700	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	2.3	2.2	-
Total Nitrogen (as N)	0.2	mg/L	< 0.2	2.3	2.2	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	140	200	220	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	13	16	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	150	210	240	-
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	7.4	4.6	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.36	< 0.05
Arsenic	0.001	mg/L	0.002	0.020	0.004	-
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0001	0.00006	0.00017	-
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.020	0.010	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.004	0.011	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	30	9.2	-
Iron (filtered)	0.05	mg/L	0.88	< 0.05	0.20	< 0.05
Lead	0.001	mg/L	< 0.001	0.017	0.010	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.083	0.012	0.027	-
Manganese (filtered)	0.005	mg/L	0.068	< 0.005	0.017	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.020	0.010	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.011	0.005	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.008	0.025	-
Zinc (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	50	68	100	-
Magnesium	0.5	mg/L	120	36	62	-
Potassium	0.5	mg/L	22	4.3	6.0	-
Sodium	0.5	mg/L	860	210	340	-

Client Sample ID			SWEB-3	QC28	QC35	QC38
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03669	M16-Fe03670	M16-Fe03671	M16-Fe03672
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Pathogens						
E.coli	1	MPN/100mL	45	-	-	-
Thermotolerant Coliforms	1	MPN/100mL	5400	-	-	-

Client Sample ID			QC39	MW55	M01SW5_1	M01SW5_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03673	M16-Fe03706	M16-Fe03707	M16-Fe03708
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	< 0.02	-	-
TRH C10-C14	0.05	mg/L	-	< 0.05	-	-
TRH C15-C28	0.1	mg/L	-	0.1	-	-
TRH C29-C36	0.1	mg/L	-	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	-	0.1	-	-
BTEX						
Benzene	0.001	mg/L	-	< 0.001	-	-
Toluene	0.001	mg/L	-	< 0.001	-	-
Ethylbenzene	0.001	mg/L	-	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	-	< 0.002	-	-
o-Xylene	0.001	mg/L	-	< 0.001	-	-
Xylenes - Total	0.003	mg/L	-	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	-	108	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	-	-
TRH C6-C10	0.02	mg/L	-	< 0.02	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05	-	-
Organophosphorous Pesticides						
Bolstar	0.002	mg/L	-	< 0.002	-	-
Chlorpyrifos	0.002	mg/L	-	< 0.002	-	-
Demeton-O	0.002	mg/L	-	< 0.002	-	-
Diazinon	0.002	mg/L	-	< 0.002	-	-
Dichlorvos	0.002	mg/L	-	< 0.002	-	-
Disulfoton	0.002	mg/L	-	< 0.002	-	-
Ethion	0.002	mg/L	-	< 0.002	-	-
Ethoprop	0.002	mg/L	-	< 0.002	-	-
Fenitrothion	0.002	mg/L	-	< 0.002	-	-
Fensulfothion	0.002	mg/L	-	< 0.002	-	-
Fenthion	0.002	mg/L	-	< 0.002	-	-
Merphos	0.002	mg/L	-	< 0.002	-	-
Methyl azinphos	0.002	mg/L	-	< 0.002	-	-
Methyl parathion	0.002	mg/L	-	< 0.002	-	-
Mevinphos	0.002	mg/L	-	< 0.002	-	-
Naled	0.002	mg/L	-	< 0.002	-	-
Phorate	0.002	mg/L	-	< 0.002	-	-
Ronnel	0.002	mg/L	-	< 0.002	-	-
Tokuthion	0.002	mg/L	-	< 0.002	-	-
Trichloronate	0.002	mg/L	-	< 0.002	-	-
Triphenylphosphate (surr.)	1	%	-	91	-	-

Client Sample ID			QC39	MW55	M01SW5_1	M01SW5_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03673	M16-Fe03706	M16-Fe03707	M16-Fe03708
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	-	0.1	-	-
TRH >C34-C40	0.1	mg/L	-	< 0.1	-	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	-	< 0.03	-	-
1-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
1-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
1,2-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3,5-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,4-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
2-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
2-Chlorophenol	0.003	mg/L	-	< 0.003	-	-
2-Methylnaphthalene	0.005	mg/L	-	< 0.005	-	-
2-Methylphenol (o-Cresol)	0.003	mg/L	-	< 0.003	-	-
2-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
2-Nitroaniline	0.005	mg/L	-	< 0.005	-	-
2-Nitrophenol	0.01	mg/L	-	< 0.01	-	-
2-Picoline	0.005	mg/L	-	< 0.005	-	-
2,3,4,6-Tetrachlorophenol	0.01	mg/L	-	< 0.01	-	-
2,4-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2,4-Dimethylphenol	0.003	mg/L	-	< 0.003	-	-
2,4-Dinitrophenol	0.03	mg/L	-	< 0.03	-	-
2,4-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
2,4,5-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2,4,6-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2,6-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2,6-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	-	< 0.006	-	-
3-Methylcholanthrene	0.005	mg/L	-	< 0.005	-	-
3,3'-Dichlorobenzidine	0.005	mg/L	-	< 0.005	-	-
4-Aminobiphenyl	0.005	mg/L	-	< 0.005	-	-
4-Bromophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Chloro-3-methylphenol	0.01	mg/L	-	< 0.01	-	-
4-Chlorophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Nitrophenol	0.03	mg/L	-	< 0.03	-	-
4,4'-DDD	0.005	mg/L	-	< 0.005	-	-
4,4'-DDE	0.005	mg/L	-	< 0.005	-	-
4,4'-DDT	0.005	mg/L	-	< 0.005	-	-
7,12-Dimethylbenz(a)anthracene	0.005	mg/L	-	< 0.005	-	-
a-BHC	0.005	mg/L	-	< 0.005	-	-
Acenaphthene	0.001	mg/L	-	< 0.001	-	-
Acenaphthylene	0.001	mg/L	-	< 0.001	-	-
Acetophenone	0.005	mg/L	-	< 0.005	-	-

Client Sample ID			QC39	MW55	M01SW5_1	M01SW5_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03673	M16-Fe03706	M16-Fe03707	M16-Fe03708
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
Aldrin	0.005	mg/L	-	< 0.005	-	-
Aniline	0.005	mg/L	-	< 0.005	-	-
Anthracene	0.001	mg/L	-	< 0.001	-	-
b-BHC	0.005	mg/L	-	< 0.005	-	-
Benz(a)anthracene	0.001	mg/L	-	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	-	< 0.001	-	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	-	< 0.001	-	-
Benzo(g,h,i)perylene	0.001	mg/L	-	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	-	< 0.001	-	-
Benzyl chloride	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroethoxy)methane	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	-	< 0.005	-	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	-	< 0.005	-	-
Butyl benzyl phthalate	0.005	mg/L	-	< 0.005	-	-
Chrysene	0.001	mg/L	-	< 0.001	-	-
d-BHC	0.005	mg/L	-	< 0.005	-	-
Di-n-butyl phthalate	0.005	mg/L	-	< 0.005	-	-
Di-n-octyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dibenz(a,h)anthracene	0.001	mg/L	-	< 0.001	-	-
Dibenz(a,j)acridine	0.005	mg/L	-	< 0.005	-	-
Dibenzofuran	0.005	mg/L	-	< 0.005	-	-
Dieldrin	0.005	mg/L	-	< 0.005	-	-
Diethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethylaminoazobenzene	0.005	mg/L	-	< 0.005	-	-
Diphenylamine	0.005	mg/L	-	< 0.005	-	-
Endosulfan I	0.005	mg/L	-	< 0.005	-	-
Endosulfan II	0.005	mg/L	-	< 0.005	-	-
Endosulfan sulphate	0.005	mg/L	-	< 0.005	-	-
Endrin	0.005	mg/L	-	< 0.005	-	-
Endrin aldehyde	0.005	mg/L	-	< 0.005	-	-
Endrin ketone	0.005	mg/L	-	< 0.005	-	-
Fluoranthene	0.001	mg/L	-	< 0.001	-	-
Fluorene	0.001	mg/L	-	< 0.001	-	-
g-BHC (Lindane)	0.005	mg/L	-	< 0.005	-	-
Heptachlor	0.005	mg/L	-	< 0.005	-	-
Heptachlor epoxide	0.005	mg/L	-	< 0.005	-	-
Hexachlorobenzene	0.005	mg/L	-	< 0.005	-	-
Hexachlorobutadiene	0.005	mg/L	-	< 0.005	-	-
Hexachlorocyclopentadiene	0.005	mg/L	-	< 0.005	-	-
Hexachloroethane	0.005	mg/L	-	< 0.005	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	< 0.001	-	-
Methoxychlor	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodibutylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodipropylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosopiperidine	0.005	mg/L	-	< 0.005	-	-
Naphthalene	0.001	mg/L	-	< 0.001	-	-
Nitrobenzene	0.05	mg/L	-	< 0.05	-	-
Pentachlorobenzene	0.005	mg/L	-	< 0.005	-	-

Client Sample ID			QC39	MW55	M01SW5_1	M01SW5_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03673	M16-Fe03706	M16-Fe03707	M16-Fe03708
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
Pentachloronitrobenzene	0.005	mg/L	-	< 0.005	-	-
Pentachlorophenol	0.01	mg/L	-	< 0.01	-	-
Phenanthrene	0.001	mg/L	-	< 0.001	-	-
Phenol	0.003	mg/L	-	< 0.003	-	-
Pronamide	0.005	mg/L	-	< 0.005	-	-
Pyrene	0.001	mg/L	-	< 0.001	-	-
Trifluralin	0.005	mg/L	-	< 0.005	-	-
Phenol-d6 (surr.)	1	%	-	57	-	-
Nitrobenzene-d5 (surr.)	1	%	-	113	-	-
2-Fluorobiphenyl (surr.)	1	%	-	100	-	-
2,4,6-Tribromophenol (surr.)	1	%	-	120	-	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	-	< 10	27	20
Chloride	1	mg/L	-	87	92	92
Conductivity (at 25°C)	1	uS/cm	-	730	310	300
pH	0.1	pH Units	-	8.2	4.6	5.2
Phosphate total (as P)	0.05	mg/L	-	-	0.45	0.44
Phosphorus reactive (as P)	0.05	mg/L	-	-	0.33	0.33
Sulphate (as S)	5	mg/L	-	60	< 5	< 5
Total Dissolved Solids	10	mg/L	-	520	^{Q19} 310	^{Q19} 300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	99	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	-	99	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	-	< 0.01	< 0.01
Nitrate (as N)	0.02	mg/L	-	-	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	1.3	1.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	1.3	1.4
Total Nitrogen (as N)	0.2	mg/L	-	-	1.3	1.4
Heavy Metals						
Aluminium	0.05	mg/L	-	0.39	0.71	0.75
Aluminium (filtered)	0.05	mg/L	< 0.05	0.18	0.65	0.60
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.0001	< 0.0001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.0001	< 0.0001
Chromium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.34	0.31	0.35
Iron (filtered)	0.05	mg/L	< 0.05	0.09	0.25	0.26
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005	0.009	0.010
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.009	0.009

Client Sample ID			QC39	MW55	M01SW5_1	M01SW5_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03673	M16-Fe03706	M16-Fe03707	M16-Fe03708
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	0.008	0.013	0.008
Zinc (filtered)	0.001	mg/L	< 0.001	0.007	0.013	0.008
Alkali Metals						
Calcium	0.5	mg/L	-	68	4.2	4.3
Magnesium	0.5	mg/L	-	12	7.1	7.2
Potassium	0.5	mg/L	-	14	4.5	4.7
Sodium	0.5	mg/L	-	71	44	45
Pathogens						
E.coli	1	MPN/100mL	-	-	68	460
Thermotolerant Coliforms	1	MPN/100mL	-	-	1700	5400

Client Sample ID			M01SW6_1	M01SW6_2	M01SW6_3	M01QC36
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03709	M16-Fe03710	M16-Fe03711	M16-Fe03712
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	1100	1300	1200	1200
Conductivity (at 25°C)	1	uS/cm	4100	4000	4100	4100
pH	0.1	pH Units	7.7	7.7	7.6	7.7
Phosphate total (as P)	0.05	mg/L	0.10	0.16	0.18	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	28	28	33	28
Total Dissolved Solids	10	mg/L	2300	2200	2400	2300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	41	45	35	40
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	41	45	35	40
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	< 0.01	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	0.04	0.06	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	1.2	0.9	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	1.2	0.9	0.8
Total Nitrogen (as N)	0.2	mg/L	0.8	1.2	1.0	0.8

Client Sample ID			M01 SW6_1	M01 SW6_2	M01 SW6_3	M01 QC36
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe03709	M16-Fe03710	M16-Fe03711	M16-Fe03712
Date Sampled			Feb 03, 2016	Feb 03, 2016	Feb 03, 2016	Feb 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.06	0.11	0.12	0.18
Aluminium (filtered)	0.05	mg/L	< 0.05	0.11	< 0.05	0.10
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.43	3.0	1.7	0.40
Iron (filtered)	0.05	mg/L	0.14	1.5	0.11	0.16
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.024	0.057	0.022	0.024
Manganese (filtered)	0.005	mg/L	0.023	0.048	0.022	0.024
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.005	0.003	0.011
Zinc (filtered)	0.001	mg/L	0.002	0.005	0.002	0.011
Alkali Metals						
Calcium	0.5	mg/L	16	11	13	12
Magnesium	0.5	mg/L	84	77	78	75
Potassium	0.5	mg/L	15	15	14	15
Sodium	0.5	mg/L	690	640	640	590
Pathogens						
E.coli	1	MPN/100mL	<10	<10	20	10
Thermotolerant Coliforms	1	MPN/100mL	2400	16000	16000	93

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Feb 10, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 04, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 04, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 10, 2016	7 Day
Organophosphorous Pesticides - Method: USEPA 8270 Organophosphorus Pesticides	Melbourne	Feb 10, 2016	7 Day
Semivolatile Organics - Method: USEPA 8270 Semivolatile Organics	Melbourne	Feb 10, 2016	7 Day
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 16, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 08, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 04, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 05, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 08, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 08, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 05, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 04, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 04, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 04, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 04, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 09, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 08, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 08, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 08, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 08, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 05, 2016	180 Day
Heavy Metals (filtered)			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 05, 2016	180 Day

Description	Testing Site	Extracted	Holding Time
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 05, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 04, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 05, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 05, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 08, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 08, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 08, 2016	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Organophosphorous Pesticides							
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.002			0.002	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl azinphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.2.3.4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.3.5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.4.5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.3.5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2.3.4.6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2.4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3.3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4.4'-DDD	mg/L	< 0.005			0.005	Pass	
4.4'-DDE	mg/L	< 0.005			0.005	Pass	
4.4'-DDT	mg/L	< 0.005			0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	mg/L	< 0.001			0.001	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Acidity (as CaCO3)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Method Blank						
Heavy Metals						
Aluminium	mg/L	< 0.05		0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05		0.05	Pass	
Arsenic	mg/L	< 0.001		0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium	mg/L	< 0.00005		0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005		0.00005	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	99		70-130	Pass	
TRH C10-C14	%	72		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	115		70-130	Pass	
Toluene	%	112		70-130	Pass	
Ethylbenzene	%	89		70-130	Pass	
m&p-Xylenes	%	99		70-130	Pass	
Xylenes - Total	%	97		70-130	Pass	
LCS - % Recovery						

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	90			70-130	Pass	
TRH C6-C10	%	100			70-130	Pass	
LCS - % Recovery							
Organophosphorous Pesticides							
Diazinon	%	86			70-130	Pass	
Ethion	%	110			70-130	Pass	
Fenitrothion	%	106			70-130	Pass	
Methyl parathion	%	83			70-130	Pass	
Mevinphos	%	123			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	71			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	105			70-130	Pass	
Ammonia (as N)	%	97			70-130	Pass	
Chloride	%	108			70-130	Pass	
Nitrate & Nitrite (as N)	%	101			70-130	Pass	
Nitrate (as N)	%	101			70-130	Pass	
Nitrite (as N)	%	92			70-130	Pass	
Phosphate total (as P)	%	93			70-130	Pass	
Sulphate (as S)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	82			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	91			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	97			80-120	Pass	
Aluminium (filtered)	%	97			80-120	Pass	
Arsenic	%	112			80-120	Pass	
Arsenic (filtered)	%	112			80-120	Pass	
Cadmium	%	98			70-130	Pass	
Cadmium (filtered)	%	98			70-130	Pass	
Chromium	%	98			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Copper	%	91			80-120	Pass	
Copper (filtered)	%	91			80-120	Pass	
Iron	%	93			80-120	Pass	
Iron (filtered)	%	93			80-120	Pass	
Lead	%	104			80-120	Pass	
Lead (filtered)	%	104			80-120	Pass	
Manganese	%	96			80-120	Pass	
Manganese (filtered)	%	96			80-120	Pass	
Mercury	%	96			75-125	Pass	
Mercury (filtered)	%	96			70-130	Pass	
Nickel	%	93			80-120	Pass	
Nickel (filtered)	%	93			80-120	Pass	
Selenium	%	103			80-120	Pass	
Selenium (filtered)	%	103			80-120	Pass	
Zinc	%	103			80-120	Pass	
Zinc (filtered)	%	103			80-120	Pass	
LCS - % Recovery							
Alkali Metals							

Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Calcium			%	101		70-130	Pass	
Calcium			%	98		70-130	Pass	
Magnesium			%	102		70-130	Pass	
Magnesium			%	98		70-130	Pass	
Potassium			%	100		70-130	Pass	
Potassium			%	89		70-130	Pass	
Sodium			%	109		70-130	Pass	
Sodium			%	91		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Fe05021	NCP	%	100		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Fe05021	NCP	%	96		70-130	Pass	
Nitrate (as N)	M16-Fe05021	NCP	%	96		70-130	Pass	
Nitrite (as N)	M16-Fe05021	NCP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe05459	NCP	%	83		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic	M16-Fe03532	NCP	%	93		75-125	Pass	
Arsenic (filtered)	M16-Fe05019	NCP	%	95		70-130	Pass	
Chromium	M16-Fe03532	NCP	%	91		75-125	Pass	
Chromium (filtered)	M16-Fe05019	NCP	%	93		70-130	Pass	
Copper	M16-Fe03532	NCP	%	80		75-125	Pass	
Copper (filtered)	M16-Fe05019	NCP	%	92		70-130	Pass	
Iron	M16-Fe03532	NCP	%	90		75-125	Pass	
Iron (filtered)	M16-Fe05019	NCP	%	93		70-130	Pass	
Lead	M16-Fe03532	NCP	%	83		75-125	Pass	
Lead (filtered)	M16-Fe05019	NCP	%	93		70-130	Pass	
Manganese	M16-Fe03532	NCP	%	91		75-125	Pass	
Manganese (filtered)	M16-Fe05019	NCP	%	92		70-130	Pass	
Mercury	M16-Fe03532	NCP	%	85		70-130	Pass	
Mercury (filtered)	M16-Fe05019	NCP	%	89		70-130	Pass	
Nickel	M16-Fe03532	NCP	%	82		75-125	Pass	
Nickel (filtered)	M16-Fe05019	NCP	%	92		70-130	Pass	
Selenium	M16-Fe03532	NCP	%	91		75-125	Pass	
Selenium (filtered)	M16-Fe05019	NCP	%	95		70-130	Pass	
Zinc	M16-Fe03532	NCP	%	76		75-125	Pass	
Zinc (filtered)	M16-Fe05019	NCP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	M16-Fe03065	NCP	%	123		70-130	Pass	
Potassium	M16-Fe03065	NCP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Cadmium	M16-Fe03658	CP	%	88		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	M16-Fe03662	CP	%	120		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Magnesium	M16-Fe03664	CP	%	98		70-130	Pass	
Sodium	M16-Fe03664	CP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe03665	CP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Fe03667	CP	%	81		70-130	Pass	
Phosphorus reactive (as P)	M16-Fe03667	CP	%	125		70-130	Pass	
Sulphate (as S)	M16-Fe03667	CP	%	95		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Fe03668	CP	%	86		70-130	Pass	
Spike - % Recovery								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Fe03671	CP	%	105		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	M16-Fe03673	CP	%	93		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-Fe03609	NCP	%	120		70-130	Pass	
TRH C10-C14	B16-Fe03920	NCP	%	108		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-Fe03609	NCP	%	118		70-130	Pass	
Toluene	M16-Fe03609	NCP	%	110		70-130	Pass	
Ethylbenzene	M16-Fe03609	NCP	%	109		70-130	Pass	
m&p-Xylenes	M16-Fe03609	NCP	%	118		70-130	Pass	
o-Xylene	M16-Fe03609	NCP	%	110		70-130	Pass	
Xylenes - Total	M16-Fe03609	NCP	%	116		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-Fe03609	NCP	%	107		70-130	Pass	
TRH C6-C10	M16-Fe03609	NCP	%	121		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	B16-Fe03920	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Semivolatile Organics				Result 1				
1,2,4-Trichlorobenzene	M16-Fe05969	NCP	%	93		70-130	Pass	
1,4-Dichlorobenzene	M16-Fe05969	NCP	%	128		70-130	Pass	
2-Chlorophenol	M16-Fe05969	NCP	%	116		30-130	Pass	
2,4-Dinitrotoluene	M16-Fe05969	NCP	%	112		70-130	Pass	
4-Chloro-3-methylphenol	M16-Fe05969	NCP	%	123		30-130	Pass	
4-Nitrophenol	M16-Fe05969	NCP	%	46		30-130	Pass	
Acenaphthene	M16-Fe05969	NCP	%	114		70-130	Pass	
N-Nitrosodipropylamine	M16-Fe05969	NCP	%	86		70-130	Pass	
Phenol	M16-Fe05969	NCP	%	46		30-130	Pass	
Pyrene	M16-Fe05969	NCP	%	124		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe03707	CP	%	91		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe03707	CP	%	83		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Alkalinity (as CaCO ₃)	M16-Fe03707	CP	%	120			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe03708	CP	%	98			70-130	Pass	
Phosphorus reactive (as P)	M16-Fe03708	CP	%	110			70-130	Pass	
Sulphate (as S)	M16-Fe03708	CP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals									
				Result 1					
Cadmium	M16-Fe03708	CP	%	86			70-130	Pass	
Spike - % Recovery									
Alkali Metals									
				Result 1					
Magnesium	M16-Fe03708	CP	%	95			70-130	Pass	
Sodium	M16-Fe03708	CP	%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Fe05021	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Fe05021	NCP	mg/L	1.0	1.0	<1	30%	Pass	
Nitrate (as N)	M16-Fe05021	NCP	mg/L	1.0	1.0	<1	30%	Pass	
Nitrite (as N)	M16-Fe05021	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M16-Fe03657	CP	pH Units	7.7	7.7	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe03657	CP	mg/L	130	130	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Fe03657	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe03657	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Fe03657	CP	mg/L	130	130	3.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Arsenic	M16-Fe03532	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Fe05019	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Fe03657	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Fe03532	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Fe05019	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Fe03532	NCP	mg/L	0.031	0.031	2.0	30%	Pass	
Copper (filtered)	M16-Fe05019	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M16-Fe03532	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Fe05019	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Fe03532	NCP	mg/L	0.026	0.027	5.0	30%	Pass	
Mercury	M16-Fe03532	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Fe05019	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Fe03532	NCP	mg/L	0.022	0.023	4.0	30%	Pass	
Nickel (filtered)	M16-Fe05019	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Selenium	M16-Fe03532	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Fe05019	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Fe05019	NCP	mg/L	0.002	0.002	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Fe03659	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Fe03660	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Fe03661	CP	mg/L	1200	1200	2.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe03661	CP	mg/L	21	19	7.0	30%	Pass
Iron	M16-Fe03661	CP	mg/L	19	18	7.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe03664	CP	mg/L	2.0	2.0	1.0	30%	Pass
Magnesium	M16-Fe03664	CP	mg/L	5.9	5.9	<1	30%	Pass
Potassium	M16-Fe03664	CP	mg/L	1.3	1.4	3.0	30%	Pass
Sodium	M16-Fe03664	CP	mg/L	33	32	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Fe03665	CP	mg/L	0.13	0.13	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Fe03665	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe03667	CP	mg/L	1900	1900	<1	30%	Pass
pH	M16-Fe03667	CP	pH Units	8.3	8.3	pass	30%	Pass
Phosphorus reactive (as P)	M16-Fe03667	CP	mg/L	0.10	0.12	18	30%	Pass
Sulphate (as S)	M16-Fe03667	CP	mg/L	16	16	2.7	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe03667	CP	mg/L	150	150	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe03667	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe03667	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Fe03667	CP	mg/L	150	160	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Fe03667	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe03669	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe03670	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	M16-Fe03670	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Manganese (filtered)	M16-Fe03670	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Fe03671	CP	mg/L	2.2	2.3	1.3	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe03671	CP	mg/L	4.6	3.9	16	30%	Pass
Iron	M16-Fe03671	CP	mg/L	9.2	8.9	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Fe03672	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M16-Fe03939	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C10-C14	M16-Fe05398	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M16-Fe05398	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M16-Fe05398	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M16-Fe03939	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M16-Fe03939	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M16-Fe03939	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M16-Fe03939	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M16-Fe03939	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M16-Fe03939	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-Fe03939	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-Fe03939	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-Fe05398	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-Fe05398	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-Fe05398	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe03706	CP	mg/L	0.18	0.21	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Fe03707	CP	mg/L	0.45	0.44	1.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Fe03707	CP	mg/L	1.3	1.4	8.6	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe03707	CP	mg/L	0.71	0.74	5.0	30%	Pass
Cadmium	M16-Fe03707	CP	mg/L	< 0.0001	< 0.00005	<1	30%	Pass
Zinc	M16-Fe03707	CP	mg/L	0.013	0.013	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe03708	CP	mg/L	92	95	3.6	30%	Pass
pH	M16-Fe03708	CP	pH Units	5.2	5.3	pass	30%	Pass
Phosphorus reactive (as P)	M16-Fe03708	CP	mg/L	0.33	0.34	3.7	30%	Pass
Sulphate (as S)	M16-Fe03708	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe03708	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe03708	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe03708	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Fe03708	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe03708	CP	mg/L	4.3	4.5	4.0	30%	Pass
Magnesium	M16-Fe03708	CP	mg/L	7.2	7.4	4.0	30%	Pass
Potassium	M16-Fe03708	CP	mg/L	4.7	4.7	1.0	30%	Pass
Sodium	M16-Fe03708	CP	mg/L	45	46	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Fe03709	CP	mg/L	2300	2200	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe03710	CP	mg/L	< 10	< 10	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M01	Microbiological Testing performed outside the recommended holding time
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 17, 2016 8:34 AM**
Eurofins | mgt reference: **489413**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **489413-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 17, 2016

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-Fe14831	M16-Fe14832	M16-Fe14833	M16-Fe14834
Eurofins mgt Sample No.			Not Provided	Not Provided	Not Provided	Not Provided
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	18	17	< 10
Chloride	1	mg/L	45	44	15	15
Conductivity (at 25°C)	1	uS/cm	500	270	260	140
pH	0.1	pH Units	7.4	5.8	6.7	6.5
Phosphate total (as P)	0.05	mg/L	0.10	0.08	0.48	0.26
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10	10	6.2	< 5
Total Dissolved Solids	10	mg/L	330	190	210	110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	180	21	93	75
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.20	0.28	0.19
Nitrate (as N)	0.02	mg/L	8.0	< 0.02	0.15	0.17
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.19
Organic Nitrogen (as N)	0.2	mg/L	1.3	0.4	2.6	1.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.6	2.9	1.4
Total Nitrogen (as N)	0.2	mg/L	9.3	0.6	3.1	1.8
Heavy Metals						
Aluminium	0.05	mg/L	3.4	14	1.9	0.31
Aluminium (filtered)	0.05	mg/L	< 0.05	0.14	0.13	0.06
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.009	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.006	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.57	1.5	0.12	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	0.11	< 0.05	< 0.05
Lead	0.001	mg/L	0.004	0.016	0.002	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.032	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.023	< 0.005	< 0.005

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-Fe14831	M16-Fe14832	M16-Fe14833	M16-Fe14834
Eurofins mgt Sample No.			Not Provided	Not Provided	Not Provided	Not Provided
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.010	0.018	0.010	0.007
Zinc (filtered)	0.001	mg/L	< 0.001	0.003	0.001	0.003
Alkali Metals						
Calcium	0.5	mg/L	47	14	39	17
Magnesium	0.5	mg/L	5.1	7.4	3.5	2.2
Potassium	0.5	mg/L	25	1.1	1.9	< 0.5
Sodium	0.5	mg/L	23	22	8.9	7.6

Client Sample ID			MW6 Water	SWL2_1 Water	SWL2_2 Water	SWL2_3 Water
Sample Matrix			M16-Fe14835	M16-Fe14836	M16-Fe14837	M16-Fe14838
Eurofins mgt Sample No.			Not Provided	Not Provided	Not Provided	Not Provided
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	34	< 10	< 10	< 10
Chloride	1	mg/L	61	66	67	66
Conductivity (at 25°C)	1	uS/cm	430	380	380	380
pH	0.1	pH Units	5.8	7.0	7.0	6.9
Phosphate total (as P)	0.05	mg/L	0.13	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	22	13	13	13
Total Dissolved Solids	10	mg/L	270	210	220	210
Turbidity	1	NTU	-	1.3	1.4	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	27	29	29	32
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.73	0.01	0.01	0.02
Nitrate (as N)	0.02	mg/L	0.33	0.04	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.3	0.4	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.3	0.4	0.3
Total Nitrogen (as N)	0.2	mg/L	1.5	0.4	0.4	0.3
Heavy Metals						
Aluminium	0.05	mg/L	14	0.26	0.24	0.25
Aluminium (filtered)	0.05	mg/L	0.21	0.19	0.18	0.23
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW6	SWL2_1	SWL2_2	SWL2_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe14835	M16-Fe14836	M16-Fe14837	M16-Fe14838
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	0.004	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.2	0.12	0.12	0.14
Iron (filtered)	0.05	mg/L	0.08	0.09	0.09	0.09
Lead	0.001	mg/L	0.015	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.025	0.005	0.005	0.008
Zinc (filtered)	0.001	mg/L	0.015	0.004	0.004	0.004
Alkali Metals						
Calcium	0.5	mg/L	13	6.7	6.9	6.6
Magnesium	0.5	mg/L	15	7.9	8.1	7.9
Potassium	0.5	mg/L	5.2	2.3	2.4	2.4
Sodium	0.5	mg/L	35	48	49	48
Pathogens						
E.coli	1	MPN/100mL	-	8	8	1
Thermotolerant Coliforms	1	MPN/100mL	-	23	70	23

Client Sample ID			SWL3_1	SWL3_2	SWL3_3	QC40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe14839	M16-Fe14840	M16-Fe14841	M16-Fe14842
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	67	66	68	46
Conductivity (at 25°C)	1	uS/cm	420	420	430	500
pH	0.1	pH Units	7.2	7.1	7.3	6.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.20
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10	10	10	9.9
Total Dissolved Solids	10	mg/L	260	250	260	320
Turbidity	1	NTU	2.5	2.8	2.8	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	74	75	76	110
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	< 0.01	< 0.01	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	8.1
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.5	0.5	1.3

Client Sample ID			SWL3_1	SWL3_2	SWL3_3	QC40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe14839	M16-Fe14840	M16-Fe14841	M16-Fe14842
Date Sampled			Not Provided	Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit				
Nitrogens (Speciated)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.5	0.5	1.3
Total Nitrogen (as N)	0.2	mg/L	0.6	0.5	0.5	9.4
Heavy Metals						
Aluminium	0.05	mg/L	0.37	0.38	0.43	4.7
Aluminium (filtered)	0.05	mg/L	0.37	0.34	0.36	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.012	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.26	0.26	0.25	0.68
Iron (filtered)	0.05	mg/L	0.20	0.19	0.19	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.009
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.004	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.004	0.031	0.012
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	17	18	17	47
Magnesium	0.5	mg/L	8.6	8.7	8.5	5.1
Potassium	0.5	mg/L	2.2	2.3	2.3	25
Sodium	0.5	mg/L	49	49	50	22
Pathogens						
E.coli	1	MPN/100mL	7	5	2	-
Thermotolerant Coliforms	1	MPN/100mL	170	49	79	-

Client Sample ID			QC41	QC43	QC44
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Fe14843	M16-Fe14844	M16-Fe14845
Date Sampled			Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	< 10	-	-
Chloride					
Chloride	1	mg/L	66	-	-
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	380	-	-
pH					
pH	0.1	pH Units	7.0	-	-
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-

Client Sample ID			QC41	QC43	QC44
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Fe14843	M16-Fe14844	M16-Fe14845
Date Sampled			Not Provided	Not Provided	Not Provided
Test/Reference	LOR	Unit			
Sulphate (as S)					
	5	mg/L	13	-	-
Total Dissolved Solids					
	10	mg/L	210	-	-
Turbidity					
	1	NTU	1.0	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO₃)					
	20	mg/L	26	-	-
Carbonate Alkalinity (as CaCO₃)					
	10	mg/L	< 10	-	-
Nitrogens (speciated)					
Ammonia (as N)					
	0.01	mg/L	< 0.01	-	-
Nitrate (as N)					
	0.02	mg/L	< 0.02	-	-
Nitrite (as N)					
	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)					
	0.2	mg/L	0.4	-	-
Total Kjeldahl Nitrogen (as N)					
	0.2	mg/L	0.4	-	-
Total Nitrogen (as N)					
	0.2	mg/L	0.4	-	-
Heavy Metals					
Aluminium					
	0.05	mg/L	0.31	-	-
Aluminium (filtered)					
	0.05	mg/L	0.26	< 0.05	< 0.05
Arsenic					
	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium					
	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)					
	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium					
	0.001	mg/L	< 0.001	-	-
Chromium (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper					
	0.001	mg/L	< 0.001	-	-
Copper (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron					
	0.05	mg/L	0.12	-	-
Iron (filtered)					
	0.05	mg/L	0.09	< 0.05	< 0.05
Lead					
	0.001	mg/L	< 0.001	-	-
Lead (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese					
	0.005	mg/L	< 0.005	-	-
Manganese (filtered)					
	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury					
	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)					
	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel					
	0.001	mg/L	< 0.001	-	-
Nickel (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium					
	0.001	mg/L	< 0.001	-	-
Selenium (filtered)					
	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc					
	0.001	mg/L	0.007	-	-
Zinc (filtered)					
	0.001	mg/L	0.004	< 0.001	< 0.001
Alkali Metals					
Calcium					
	0.5	mg/L	6.8	-	-
Magnesium					
	0.5	mg/L	7.9	-	-
Potassium					
	0.5	mg/L	2.5	-	-
Sodium					
	0.5	mg/L	49	-	-
Pathogens					
E.coli					
	1	MPN/100mL	2	-	-
Thermotolerant Coliforms					
	1	MPN/100mL	70	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 19, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 17, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 17, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 17, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 18, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 17, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 18, 2016	2 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 19, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 19, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 19, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 22, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 22, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 22, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 17, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 17, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: MGT 1100A	Melbourne	Feb 18, 2016	28 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 18, 2016	28 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 17, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 19, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 19, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 17, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: 89-91 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 489413 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Feb 17, 2016 8:34 AM Due: Feb 24, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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Eurofins | mgt Client Manager: Natalie Krasselt

Sample Detail					Nitrogens (speciated)	Eurofins mgt Suite B11	Zinc (filtered)	Zinc	Turbidity	Total Dissolved Solids	Thermotolerant Coliforms	Selenium (filtered)	Selenium	Phosphorus reactive (as P)	Phosphate total (as P)	pH	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Lead (filtered)	Lead	Iron (filtered)	Iron	E.coli	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium	Acidity (as CaCO3)
Laboratory where analysis is conducted																																							
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																																							
Brisbane Laboratory - NATA Site # 20794																																							
External Laboratory																																							
SWL3_2	Not Provided		Water	M16-Fe14840	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SWL3_3	Not Provided		Water	M16-Fe14841	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QC40	Not Provided		Water	M16-Fe14842	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QC41	Not Provided		Water	M16-Fe14843	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QC43	Not Provided		Water	M16-Fe14844			X		X		X							X			X																	X	
QC44	Not Provided		Water	M16-Fe14845			X		X		X							X			X																	X	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	
Chloride	%	107			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Phosphate total (as P)	%	96			70-130	Pass		
Sulphate (as S)	%	98			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	104			70-130	Pass		
Nitrate (as N)	%	94			70-130	Pass		
Nitrite (as N)	%	103			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	85			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	102			80-120	Pass		
Aluminium (filtered)	%	102			80-120	Pass		
Arsenic	%	93			80-120	Pass		
Arsenic (filtered)	%	93			80-120	Pass		
Cadmium	%	103			70-130	Pass		
Cadmium (filtered)	%	103			70-130	Pass		
Chromium	%	98			80-120	Pass		
Chromium (filtered)	%	98			80-120	Pass		
Copper	%	90			80-120	Pass		
Copper (filtered)	%	90			80-120	Pass		
Iron	%	90			80-120	Pass		
Iron (filtered)	%	92			80-120	Pass		
Lead	%	89			80-120	Pass		
Lead (filtered)	%	89			80-120	Pass		
Manganese	%	97			80-120	Pass		
Manganese (filtered)	%	97			80-120	Pass		
Mercury	%	91			75-125	Pass		
Mercury (filtered)	%	91			70-130	Pass		
Nickel	%	98			80-120	Pass		
Nickel (filtered)	%	98			80-120	Pass		
Selenium	%	94			80-120	Pass		
Selenium (filtered)	%	115			80-120	Pass		
Zinc	%	99			80-120	Pass		
Zinc (filtered)	%	99			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	97			70-130	Pass		
Magnesium	%	104			70-130	Pass		
Potassium	%	91			70-130	Pass		
Sodium	%	93			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Fe14831	CP	%	100		70-130	Pass	
Phosphorus reactive (as P)	M16-Fe14831	CP	%	115		70-130	Pass	
Sulphate (as S)	M16-Fe14831	CP	%	87		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe14688	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Fe14674	NCP	%	95		70-130	Pass	
Nitrate (as N)	M16-Fe14200	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-Fe14674	NCP	%	102		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)	M16-Fe19308	NCP	%	76			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Fe17993	NCP	%	97			75-125	Pass	
Arsenic (filtered)	S16-Fe16901	NCP	%	99			70-130	Pass	
Chromium	M16-Fe17993	NCP	%	96			75-125	Pass	
Chromium (filtered)	S16-Fe16901	NCP	%	90			70-130	Pass	
Copper	M16-Fe17993	NCP	%	94			75-125	Pass	
Copper (filtered)	S16-Fe16901	NCP	%	86			70-130	Pass	
Iron	M16-Fe17993	NCP	%	96			75-125	Pass	
Iron (filtered)	B16-Fe16840	NCP	%	87			70-130	Pass	
Lead	M16-Fe17993	NCP	%	94			75-125	Pass	
Lead (filtered)	S16-Fe16901	NCP	%	88			70-130	Pass	
Manganese	M16-Fe17993	NCP	%	95			75-125	Pass	
Manganese (filtered)	B16-Fe16840	NCP	%	84			70-130	Pass	
Mercury	M16-Fe17993	NCP	%	98			70-130	Pass	
Mercury (filtered)	S16-Fe16901	NCP	%	80			70-130	Pass	
Nickel	M16-Fe17993	NCP	%	94			75-125	Pass	
Nickel (filtered)	S16-Fe16901	NCP	%	88			70-130	Pass	
Selenium	M16-Fe17993	NCP	%	95			75-125	Pass	
Selenium (filtered)	S16-Fe16901	NCP	%	105			70-130	Pass	
Zinc	M16-Fe16453	NCP	%	90			75-125	Pass	
Zinc (filtered)	S16-Fe16901	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe14831	CP	%	103			70-130	Pass	
Magnesium	M16-Fe14831	CP	%	109			70-130	Pass	
Potassium	M16-Fe14831	CP	%	96			70-130	Pass	
Sodium	M16-Fe14831	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe14840	CP	%	100			70-130	Pass	
Phosphorus reactive (as P)	M16-Fe14840	CP	%	103			70-130	Pass	
Sulphate (as S)	M16-Fe14840	CP	%	88			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe14841	CP	%	100			70-130	Pass	
Magnesium	M16-Fe14841	CP	%	97			70-130	Pass	
Potassium	M16-Fe14841	CP	%	93			70-130	Pass	
Sodium	M16-Fe14841	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Fe14843	CP	%	112			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Fe14831	CP	mg/L	45	46	1.9	30%	Pass	
Phosphorus reactive (as P)	M16-Fe14831	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Fe14831	CP	mg/L	10	10	2.9	30%	Pass	
Total Dissolved Solids	M16-Fe14715	NCP	mg/L	1700	1600	4.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe14831	CP	mg/L	3.4	3.5	4.0	30%	Pass
Aluminium (filtered)	M16-Fe14831	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	S16-Fe16901	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	S16-Fe16901	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	S16-Fe16901	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Fe17993	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	B16-Fe16840	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	S16-Fe16901	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Fe17993	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	S16-Fe16901	NCP	mg/L	1.0	0.99	2.0	30%	Pass
Mercury	M16-Fe17993	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	S16-Fe16901	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	S16-Fe16901	NCP	mg/L	0.001	0.001	1.0	30%	Pass
Selenium	M16-Fe17993	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	S16-Fe16901	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Fe14831	CP	mg/L	0.010	0.008	22	30%	Pass
Zinc (filtered)	S16-Fe16901	NCP	mg/L	0.002	0.003	18	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe14831	CP	mg/L	47	47	1.0	30%	Pass
Magnesium	M16-Fe14831	CP	mg/L	5.1	5.1	<1	30%	Pass
Potassium	M16-Fe14831	CP	mg/L	25	26	2.0	30%	Pass
Sodium	M16-Fe14831	CP	mg/L	23	23	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Fe14832	CP	uS/cm	270	270	1.0	30%	Pass
pH	M16-Fe14832	CP	pH Units	5.8	5.9	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe14832	CP	mg/L	21	22	7.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe14832	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe14833	CP	mg/L	17	15	18	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Fe14839	CP	NTU	2.5	2.6	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe14840	CP	mg/L	66	68	1.9	30%	Pass
Phosphorus reactive (as P)	M16-Fe14840	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Fe14840	CP	mg/L	10	10	3.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe14840	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate (as N)	M16-Fe14840	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Fe14840	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Fe14841	CP	uS/cm	430	430	<1	30%	Pass
pH	M16-Fe14841	CP	pH Units	7.3	7.3	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe14841	CP	mg/L	76	70	7.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe14841	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe14841	CP	mg/L	0.36	0.34	6.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe14841	CP	mg/L	17	17	2.0	30%	Pass
Magnesium	M16-Fe14841	CP	mg/L	8.5	8.5	<1	30%	Pass
Potassium	M16-Fe14841	CP	mg/L	2.3	2.4	5.0	30%	Pass
Sodium	M16-Fe14841	CP	mg/L	50	49	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe14842	CP	mg/L	4.7	4.5	5.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Fe14843	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Fe14843	CP	mg/L	0.4	0.4	11	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 19, 2016 8:11 AM**
Eurofins | mgt reference: **489774**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

NO MICRO BOTTLE SUPPLIED FOR MW40,41,46,47,45

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Richelle Bunbury

Report 489774-W
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 19, 2016

Client Sample ID			MW9 Water	MW55 Water	QC45 Water	M05 MW40 Water
Sample Matrix			M16-Fe17812	M16-Fe17813	M16-Fe17814	M16-Fe17815
Eurofins mgt Sample No.			Feb 17, 2016	Feb 17, 2016	Feb 17, 2016	Feb 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	< 0.02	-	-
TRH C10-C14	0.05	mg/L	-	< 0.05	-	-
TRH C15-C28	0.1	mg/L	-	< 0.1	-	-
TRH C29-C36	0.1	mg/L	-	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	-	< 0.1	-	-
BTEX						
Benzene	0.001	mg/L	-	< 0.001	-	-
Toluene	0.001	mg/L	-	< 0.001	-	-
Ethylbenzene	0.001	mg/L	-	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	-	< 0.002	-	-
o-Xylene	0.001	mg/L	-	< 0.001	-	-
Xylenes - Total	0.003	mg/L	-	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	-	99	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	-	-
TRH C6-C10	0.02	mg/L	-	< 0.02	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.0001	mg/L	-	< 0.0001	-	-
4,4'-DDD	0.00001	mg/L	-	< 0.00001	-	-
4,4'-DDE	0.00001	mg/L	-	< 0.00002	-	-
4,4'-DDT	0.00001	mg/L	-	< 0.00001	-	-
a-BHC	0.00001	mg/L	-	< 0.00001	-	-
Aldrin	0.00001	mg/L	-	< 0.00001	-	-
b-BHC	0.00001	mg/L	-	< 0.00001	-	-
d-BHC	0.00001	mg/L	-	< 0.00001	-	-
Dieldrin	0.00001	mg/L	-	< 0.00001	-	-
Endosulfan I	0.00001	mg/L	-	< 0.00001	-	-
Endosulfan II	0.00001	mg/L	-	< 0.00001	-	-
Endosulfan sulphate	0.00001	mg/L	-	< 0.00001	-	-
Endrin	0.00001	mg/L	-	< 0.00001	-	-
Endrin aldehyde	0.00001	mg/L	-	< 0.00001	-	-
Endrin ketone	0.00001	mg/L	-	< 0.00001	-	-
g-BHC (Lindane)	0.00001	mg/L	-	< 0.00001	-	-

Client Sample ID			MW9	MW55	QC45	MOS MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17812	M16-Fe17813	M16-Fe17814	M16-Fe17815
Date Sampled			Feb 17, 2016	Feb 17, 2016	Feb 17, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor	0.00001	mg/L	-	< 0.00001	-	-
Heptachlor epoxide	0.00001	mg/L	-	< 0.00001	-	-
Hexachlorobenzene	0.00001	mg/L	-	< 0.00001	-	-
Methoxychlor	0.00001	mg/L	-	< 0.00001	-	-
Toxaphene	0.0001	mg/L	-	< 0.0001	-	-
Dibutylchloroendate (surr.)	1	%	-	112	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	92	-	-
Organophosphorous Pesticides						
Bolstar	0.0001	mg/L	-	< 0.0005	-	-
Chlorpyrifos	0.0001	mg/L	-	< 0.0005	-	-
Demeton-O	0.0001	mg/L	-	< 0.0005	-	-
Diazinon	0.0001	mg/L	-	< 0.0005	-	-
Dichlorvos	0.0001	mg/L	-	< 0.0005	-	-
Disulfoton	0.0001	mg/L	-	< 0.0005	-	-
Ethion	0.0001	mg/L	-	< 0.0005	-	-
Ethoprop	0.0001	mg/L	-	< 0.0005	-	-
Fenitrothion	0.0001	mg/L	-	< 0.0005	-	-
Fensulfothion	0.0001	mg/L	-	< 0.0005	-	-
Fenthion	0.0001	mg/L	-	< 0.0005	-	-
Merphos	0.0001	mg/L	-	< 0.0005	-	-
Methyl azinphos	0.0001	mg/L	-	< 0.0005	-	-
Methyl parathion	0.0001	mg/L	-	< 0.0005	-	-
Mevinphos	0.0001	mg/L	-	< 0.0005	-	-
Naled	0.0001	mg/L	-	< 0.0005	-	-
Phorate	0.0001	mg/L	-	< 0.0005	-	-
Ronnel	0.0001	mg/L	-	< 0.0005	-	-
Tokuthion	0.0001	mg/L	-	< 0.0005	-	-
Trichloronate	0.0001	mg/L	-	< 0.0005	-	-
Triphenylphosphate (surr.)	1	%	-	94	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	-	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	-	< 0.1	-	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	-	< 0.03	-	-
1-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
1-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
1,2-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,3,5-Trichlorobenzene	0.005	mg/L	-	< 0.005	-	-
1,4-Dichlorobenzene	0.005	mg/L	-	< 0.005	-	-
2-Chloronaphthalene	0.005	mg/L	-	< 0.005	-	-
2-Chlorophenol	0.003	mg/L	-	< 0.003	-	-
2-Methylnaphthalene	0.005	mg/L	-	< 0.005	-	-

Client Sample ID			MW9	MW55	QC45	MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17812	M16-Fe17813	M16-Fe17814	M16-Fe17815
Date Sampled			Feb 17, 2016	Feb 17, 2016	Feb 17, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
2-Methylphenol (o-Cresol)	0.003	mg/L	-	< 0.003	-	-
2-Naphthylamine	0.005	mg/L	-	< 0.005	-	-
2-Nitroaniline	0.005	mg/L	-	< 0.005	-	-
2-Nitrophenol	0.01	mg/L	-	< 0.01	-	-
2-Picoline	0.005	mg/L	-	< 0.005	-	-
2.3.4.6-Tetrachlorophenol	0.01	mg/L	-	< 0.01	-	-
2.4-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2.4-Dimethylphenol	0.003	mg/L	-	< 0.003	-	-
2.4-Dinitrophenol	0.03	mg/L	-	< 0.03	-	-
2.4-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
2.4.5-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2.4.6-Trichlorophenol	0.01	mg/L	-	< 0.01	-	-
2.6-Dichlorophenol	0.003	mg/L	-	< 0.003	-	-
2.6-Dinitrotoluene	0.005	mg/L	-	< 0.005	-	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	-	< 0.006	-	-
3-Methylcholanthrene	0.005	mg/L	-	< 0.005	-	-
3.3'-Dichlorobenzidine	0.005	mg/L	-	< 0.005	-	-
4-Aminobiphenyl	0.005	mg/L	-	< 0.005	-	-
4-Bromophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Chloro-3-methylphenol	0.01	mg/L	-	< 0.01	-	-
4-Chlorophenyl phenyl ether	0.005	mg/L	-	< 0.005	-	-
4-Nitrophenol	0.03	mg/L	-	< 0.03	-	-
4.4'-DDD	0.005	mg/L	-	< 0.005	-	-
4.4'-DDE	0.005	mg/L	-	< 0.005	-	-
4.4'-DDT	0.005	mg/L	-	< 0.005	-	-
7.12-Dimethylbenz(a)anthracene	0.005	mg/L	-	< 0.005	-	-
a-BHC	0.005	mg/L	-	< 0.005	-	-
Acenaphthene	0.001	mg/L	-	< 0.001	-	-
Acenaphthylene	0.001	mg/L	-	< 0.001	-	-
Acetophenone	0.005	mg/L	-	< 0.005	-	-
Aldrin	0.005	mg/L	-	< 0.005	-	-
Aniline	0.005	mg/L	-	< 0.005	-	-
Anthracene	0.001	mg/L	-	< 0.001	-	-
b-BHC	0.005	mg/L	-	< 0.005	-	-
Benz(a)anthracene	0.001	mg/L	-	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	-	< 0.001	-	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	-	< 0.001	-	-
Benzo(g,h,i)perylene	0.001	mg/L	-	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	-	< 0.001	-	-
Benzyl chloride	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroethoxy)methane	0.005	mg/L	-	< 0.005	-	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	-	< 0.005	-	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	-	< 0.005	-	-
Butyl benzyl phthalate	0.005	mg/L	-	< 0.005	-	-
Chrysene	0.001	mg/L	-	< 0.001	-	-
d-BHC	0.005	mg/L	-	< 0.005	-	-
Di-n-butyl phthalate	0.005	mg/L	-	< 0.005	-	-
Di-n-octyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dibenz(a,h)anthracene	0.001	mg/L	-	< 0.001	-	-

Client Sample ID			MW9	MW55	QC45	MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17812	M16-Fe17813	M16-Fe17814	M16-Fe17815
Date Sampled			Feb 17, 2016	Feb 17, 2016	Feb 17, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
Dibenz(a,j)acridine	0.005	mg/L	-	< 0.005	-	-
Dibenzofuran	0.005	mg/L	-	< 0.005	-	-
Dieldrin	0.005	mg/L	-	< 0.005	-	-
Diethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethyl phthalate	0.005	mg/L	-	< 0.005	-	-
Dimethylaminoazobenzene	0.005	mg/L	-	< 0.005	-	-
Diphenylamine	0.005	mg/L	-	< 0.005	-	-
Endosulfan I	0.005	mg/L	-	< 0.005	-	-
Endosulfan II	0.005	mg/L	-	< 0.005	-	-
Endosulfan sulphate	0.005	mg/L	-	< 0.005	-	-
Endrin	0.005	mg/L	-	< 0.005	-	-
Endrin aldehyde	0.005	mg/L	-	< 0.005	-	-
Endrin ketone	0.005	mg/L	-	< 0.005	-	-
Fluoranthene	0.001	mg/L	-	< 0.001	-	-
Fluorene	0.001	mg/L	-	< 0.001	-	-
g-BHC (Lindane)	0.005	mg/L	-	< 0.005	-	-
Heptachlor	0.005	mg/L	-	< 0.005	-	-
Heptachlor epoxide	0.005	mg/L	-	< 0.005	-	-
Hexachlorobenzene	0.005	mg/L	-	< 0.005	-	-
Hexachlorobutadiene	0.005	mg/L	-	< 0.005	-	-
Hexachlorocyclopentadiene	0.005	mg/L	-	< 0.005	-	-
Hexachloroethane	0.005	mg/L	-	< 0.005	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	< 0.001	-	-
Methoxychlor	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodibutylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosodipropylamine	0.005	mg/L	-	< 0.005	-	-
N-Nitrosopiperidine	0.005	mg/L	-	< 0.005	-	-
Naphthalene	0.001	mg/L	-	< 0.001	-	-
Nitrobenzene	0.05	mg/L	-	< 0.05	-	-
Pentachlorobenzene	0.005	mg/L	-	< 0.005	-	-
Pentachloronitrobenzene	0.005	mg/L	-	< 0.005	-	-
Pentachlorophenol	0.01	mg/L	-	< 0.01	-	-
Phenanthrene	0.001	mg/L	-	< 0.001	-	-
Phenol	0.003	mg/L	-	< 0.003	-	-
Pronamide	0.005	mg/L	-	< 0.005	-	-
Pyrene	0.001	mg/L	-	< 0.001	-	-
Trifluralin	0.005	mg/L	-	< 0.005	-	-
Phenol-d6 (surr.)	1	%	-	32	-	-
Nitrobenzene-d5 (surr.)	1	%	-	63	-	-
2-Fluorobiphenyl (surr.)	1	%	-	54	-	-
2.4.6-Tribromophenol (surr.)	1	%	-	60	-	-
Acidity (as CaCO ₃)	10	mg/L	19	< 10	-	24
Ammonia (as N)	0.01	mg/L	0.12	0.04	-	0.34
Chloride	1	mg/L	19	89	-	80
Conductivity (at 25°C)	1	uS/cm	120	900	-	310
Nitrate & Nitrite (as N)	0.05	mg/L	1.2	0.09	-	< 0.05
Nitrate (as N)	0.02	mg/L	1.2	0.09	-	< 0.02
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	-	< 0.02

Client Sample ID			MW9	MW55	QC45	M05 MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17812	M16-Fe17813	M16-Fe17814	M16-Fe17815
Date Sampled			Feb 17, 2016	Feb 17, 2016	Feb 17, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
pH	0.1	pH Units	4.3	8.1	-	4.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	< 0.05
Sulphate (as S)	5	mg/L	< 5	61	-	12
Total Dissolved Solids	10	mg/L	69	590	-	220
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.7	-	0.7
Total Nitrogen (as N)	0.2	mg/L	1.5	0.8	-	0.7
Turbidity	1	NTU	-	-	-	30
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	110	-	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	< 10
Heavy Metals						
Aluminium	0.05	mg/L	13	0.53	-	0.99
Aluminium (filtered)	0.05	mg/L	0.47	0.19	< 0.05	0.79
Arsenic	0.001	mg/L	0.003	< 0.001	-	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	-	< 0.0005
Cadmium (filtered)	0.0002	mg/L	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002
Chromium	0.001	mg/L	0.011	0.002	-	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	0.004	-	< 0.005
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	3.8	0.45	-	0.32
Iron (filtered)	0.05	mg/L	2.5	0.09	< 0.05	0.27
Lead	0.001	mg/L	0.009	0.003	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	-	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	0.001	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.007	-	0.007
Zinc (filtered)	0.001	mg/L	0.006	0.005	< 0.001	0.005
Alkali Metals						
Calcium	0.5	mg/L	4.6	66	-	1.6
Magnesium	0.5	mg/L	1.5	11	-	4.8
Potassium	0.5	mg/L	0.6	13	-	1.9
Sodium	0.5	mg/L	9.5	73	-	33
Pathogens						
E.coli	1	MPN/100mL	-	-	-	^{M15} <10
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	>16000

Client Sample ID			M05 MW41	M05 MW46	M05 MW47	M05 MW45
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17816	M16-Fe17817	M16-Fe17818	M16-Fe17819
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	120	10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.54	0.43	0.15	0.25
Chloride	1	mg/L	210	740	660	470
Conductivity (at 25°C)	1	uS/cm	910	2700	2500	1900
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	3.4	8.3	8.2	8.4
Phosphate total (as P)	0.05	mg/L	0.28	0.36	0.34	1.6
Phosphorus reactive (as P)	0.05	mg/L	0.28	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	18	13	14	11
Total Dissolved Solids	10	mg/L	830	1800	1400	1100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.1	1.1	0.7	0.6
Total Nitrogen (as N)	0.2	mg/L	4.1	1.1	0.7	0.6
Turbidity	1	NTU	360	3200	2500	1900
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	530	210	210
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	18
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	2.1	22	21	11
Aluminium (filtered)	0.05	mg/L	2.0	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.011	0.011	0.011
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.002
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0002	mg/L	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002
Chromium	0.001	mg/L	0.001	0.043	0.026	0.015
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.044	0.006	0.003
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.82	38	23	56
Iron (filtered)	0.05	mg/L	0.76	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	0.035	0.026	0.011
Lead (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.15	0.084	0.011
Manganese (filtered)	0.005	mg/L	< 0.005	0.034	0.046	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.036	0.018	0.010
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.002	0.016	0.007	0.008
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Zinc	0.001	mg/L	0.007	0.14	0.028	0.006
Zinc (filtered)	0.001	mg/L	0.010	< 0.001	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	< 5	87	61	59
Magnesium	0.5	mg/L	11	54	43	36
Potassium	0.5	mg/L	< 5	5.1	5.1	4.8
Sodium	0.5	mg/L	95	310	310	210

Client Sample ID			M05 MW41	M05 MW46	M05 MW47	M05 MW45
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17816	M16-Fe17817	M16-Fe17818	M16-Fe17819
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Pathogens						
E.coli	1	MPN/100mL	M15 <10	M15 <10	M15 <10	45
Thermotolerant Coliforms	1	MPN/100mL	700	1100	>16000	700

Client Sample ID			SWL18-1	SWL18-2	SWL19-1	SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17820	M16-Fe17821	M16-Fe17822	M16-Fe17823
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Chloride	1	mg/L	2600	2500	1300	1400
Conductivity (at 25°C)	1	uS/cm	7800	7800	4500	4500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
pH	0.1	pH Units	8.4	8.3	7.3	7.5
Phosphate total (as P)	0.05	mg/L	0.19	0.20	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.11	0.10	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	37	35	27	30
Total Dissolved Solids	10	mg/L	4500	4500	2500	2500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	2.1	0.5	0.5
Total Nitrogen (as N)	0.2	mg/L	1.7	2.1	0.5	0.5
Turbidity	1	NTU	26	13	150	12
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	150	160	37	41
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	40	16	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	0.80	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0002	mg/L	G02 < 0.0002	G02 < 0.0002	G02 < 0.0002	G02 < 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.0	2.1	6.0	0.22
Iron (filtered)	0.05	mg/L	0.80	0.81	0.34	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.17	0.15	0.018	0.010
Manganese (filtered)	0.005	mg/L	0.17	0.14	0.014	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.001	< 0.001

Client Sample ID			SWL18-1	SWL18-2	SWL19-1	SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17820	M16-Fe17821	M16-Fe17822	M16-Fe17823
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.004	0.013	0.003
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	63	60	11	11
Magnesium	0.5	mg/L	160	160	79	81
Potassium	0.5	mg/L	30	31	12	12
Sodium	0.5	mg/L	1100	1100	620	620
Pathogens						
E.coli	1	MPN/100mL	10	10	20	M15<10
Thermotolerant Coliforms	1	MPN/100mL	16000	>16000	790	9200

Client Sample ID			SWL19-3	SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17824	M16-Fe17825	M16-Fe17826	M16-Fe17827
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	36	35	32
Ammonia (as N)	0.01	mg/L	< 0.01	0.06	0.05	0.05
Chloride	1	mg/L	1400	64	63	62
Conductivity (at 25°C)	1	uS/cm	4600	310	300	310
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.02	0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.2	4.0	4.0	4.0
Phosphate total (as P)	0.05	mg/L	< 0.05	0.10	0.10	0.09
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.09	0.09	0.08
Sulphate (as S)	5	mg/L	32	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	2500	260	280	280
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.3	1.0	1.3
Total Nitrogen (as N)	0.2	mg/L	0.4	1.3	1.0	1.3
Turbidity	1	NTU	10	180	45	120
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	41	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	0.45	1.1	0.43	0.55
Aluminium (filtered)	0.05	mg/L	< 0.05	0.33	0.32	0.33
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0002	mg/L	G02< 0.0002	G02< 0.0002	G02< 0.0002	G02< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL19-3	SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17824	M16-Fe17825	M16-Fe17826	M16-Fe17827
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	7.8	0.53	0.29	0.33
Iron (filtered)	0.05	mg/L	0.13	0.22	0.21	0.26
Lead	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.020	0.009	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.011	0.006	0.007
Zinc (filtered)	0.001	mg/L	0.003	0.004	0.005	0.007
Alkali Metals						
Calcium	0.5	mg/L	12	1.6	1.6	1.8
Magnesium	0.5	mg/L	83	5.6	5.6	5.5
Potassium	0.5	mg/L	12	1.6	1.6	1.4
Sodium	0.5	mg/L	640	31	32	31
Pathogens						
E.coli	1	MPN/100mL	M15 <10	330	130	110
Thermotolerant Coliforms	1	MPN/100mL	330	3500	330	700

Client Sample ID			MW48	MW49	MW43	MW44
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe17828	M16-Fe17829	M16-Fe17830	M16-Fe17831
Date Sampled			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	17	15	38	< 10
Ammonia (as N)	0.01	mg/L	0.03	< 0.01	1.1	0.12
Chloride	1	mg/L	870	1700	1200	370
Conductivity (at 25°C)	1	uS/cm	3200	5700	4200	1600
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	4.7	6.1	7.6	8.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	5.4	3.3
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
Sulphate (as S)	5	mg/L	39	79	12	< 5
Total Dissolved Solids	10	mg/L	1700	2900	3500	1100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.6	11	5.0
Total Nitrogen (as N)	0.2	mg/L	0.8	0.6	11	5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	130	230
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW48 Water	MW49 Water	MW43 Water	MW44 Water
Sample Matrix			M16-Fe17828	M16-Fe17829	M16-Fe17830	M16-Fe17831
Eurofins mgt Sample No.			Feb 18, 2016	Feb 18, 2016	Feb 18, 2016	Feb 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	2.5	0.23	8.1	32
Aluminium (filtered)	0.05	mg/L	0.25	< 0.05	1.1	0.25
Arsenic	0.001	mg/L	0.001	0.001	0.006	0.024
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.004
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0002	mg/L	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002	^{G02} < 0.0002
Chromium	0.001	mg/L	0.001	< 0.001	0.017	0.053
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	0.004
Copper	0.001	mg/L	0.001	0.006	< 0.001	0.011
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Iron	0.05	mg/L	2.0	3.4	1.2	28
Iron (filtered)	0.05	mg/L	0.70	2.0	0.15	0.32
Lead	0.001	mg/L	0.018	0.025	0.011	0.064
Lead (filtered)	0.001	mg/L	0.003	0.009	0.001	0.002
Manganese	0.005	mg/L	0.026	0.035	0.008	0.023
Manganese (filtered)	0.005	mg/L	0.025	0.033	0.008	0.012
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	0.0003
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.010	0.006	0.004	0.019
Nickel (filtered)	0.001	mg/L	0.006	0.006	0.001	0.004
Selenium	0.001	mg/L	< 0.001	< 0.001	0.008	0.030
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.007
Zinc	0.001	mg/L	0.018	0.019	0.006	0.021
Zinc (filtered)	0.001	mg/L	0.018	0.018	0.004	0.006
Alkali Metals						
Calcium	0.5	mg/L	12	27	58	19
Magnesium	0.5	mg/L	64	150	100	21
Potassium	0.5	mg/L	10	14	5.9	3.5
Sodium	0.5	mg/L	440	750	530	220

Client Sample ID			QC49 Water	QC50 Water
Sample Matrix			M16-Fe17832	M16-Fe17833
Eurofins mgt Sample No.			Feb 18, 2016	Feb 18, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.0002	mg/L	^{G02} < 0.0002	^{G02} < 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Feb 22, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 19, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 19, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 22, 2016	7 Day
Organochlorine Pesticides - Method: USEPA 8081 Organochlorine Pesticides	Melbourne	Feb 22, 2016	7 Day
Organophosphorous Pesticides - Method: USEPA 8270 Organophosphorus Pesticides	Melbourne	Feb 22, 2016	7 Day
Semivolatile Organics - Method: USEPA 8270 Semivolatile Organics	Melbourne	Feb 22, 2016	7 Day
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 19, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 19, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 19, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 19, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 19, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 19, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 19, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 19, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 19, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 19, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 19, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 22, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 19, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 01, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 19, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 19, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 19, 2016	180 Day
E.coli	Melbourne	Feb 19, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
- Method: LTM-MIC-6621 Thermotolerant Coliforms	Melbourne	Feb 19, 2016	24 Hour
- Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Feb 19, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Feb 19, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/L	< 0.02		0.02	Pass	
TRH C10-C14	mg/L	< 0.05		0.05	Pass	
TRH C15-C28	mg/L	< 0.1		0.1	Pass	
TRH C29-C36	mg/L	< 0.1		0.1	Pass	
Method Blank						
BTEX						
Benzene	mg/L	< 0.001		0.001	Pass	
Toluene	mg/L	< 0.001		0.001	Pass	
Ethylbenzene	mg/L	< 0.001		0.001	Pass	
m&p-Xylenes	mg/L	< 0.002		0.002	Pass	
o-Xylene	mg/L	< 0.001		0.001	Pass	
Xylenes - Total	mg/L	< 0.003		0.003	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/L	< 0.01		0.01	Pass	
TRH C6-C10	mg/L	< 0.02		0.02	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	mg/L	< 0.05		0.05	Pass	
TRH >C16-C34	mg/L	< 0.1		0.1	Pass	
TRH >C34-C40	mg/L	< 0.1		0.1	Pass	
Method Blank						
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03		0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005		0.005	Pass	
1-Naphthylamine	mg/L	< 0.005		0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005		0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005		0.005	Pass	
1,2,3,4-Tetrachlorobenzene	mg/L	< 0.005		0.005	Pass	
1,2,3,5-Tetrachlorobenzene	mg/L	< 0.005		0.005	Pass	
1,2,4-Trichlorobenzene	mg/L	< 0.005		0.005	Pass	
1,2,4,5-Tetrachlorobenzene	mg/L	< 0.005		0.005	Pass	
1,3-Dichlorobenzene	mg/L	< 0.005		0.005	Pass	
1,3,5-Trichlorobenzene	mg/L	< 0.005		0.005	Pass	
1,4-Dichlorobenzene	mg/L	< 0.005		0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005		0.005	Pass	
2-Chlorophenol	mg/L	< 0.003		0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005		0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003		0.003	Pass	
2-Naphthylamine	mg/L	< 0.005		0.005	Pass	
2-Nitroaniline	mg/L	< 0.005		0.005	Pass	
2-Nitrophenol	mg/L	< 0.01		0.01	Pass	
2-Picoline	mg/L	< 0.005		0.005	Pass	
2,3,4,6-Tetrachlorophenol	mg/L	< 0.01		0.01	Pass	
2,4-Dichlorophenol	mg/L	< 0.003		0.003	Pass	
2,4-Dimethylphenol	mg/L	< 0.003		0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03		0.03	Pass	
2,4-Dinitrotoluene	mg/L	< 0.005		0.005	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01		0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01		0.01	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3.3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4.4'-DDD	mg/L	< 0.005			0.005	Pass	
4.4'-DDE	mg/L	< 0.005			0.005	Pass	
4.4'-DDT	mg/L	< 0.005			0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0005			0.0005	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	85			70-130	Pass	
TRH C10-C14	%	109			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	107			70-130	Pass	
Toluene	%	87			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
Xylenes - Total	%	96			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	87			70-130	Pass	
TRH C6-C10	%	85			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	96			70-130	Pass	
4,4'-DDE	%	77			70-130	Pass	
4,4'-DDT	%	77			70-130	Pass	
a-BHC	%	74			70-130	Pass	
Aldrin	%	81			70-130	Pass	
b-BHC	%	76			70-130	Pass	
d-BHC	%	86			70-130	Pass	
Dieldrin	%	99			70-130	Pass	
Endosulfan I	%	87			70-130	Pass	
Endosulfan II	%	73			70-130	Pass	
Endosulfan sulphate	%	75			70-130	Pass	
Endrin	%	89			70-130	Pass	
Endrin aldehyde	%	71			70-130	Pass	
Endrin ketone	%	94			70-130	Pass	
g-BHC (Lindane)	%	80			70-130	Pass	
Heptachlor	%	86			70-130	Pass	
Heptachlor epoxide	%	78			70-130	Pass	
Hexachlorobenzene	%	97			70-130	Pass	
Methoxychlor	%	84			70-130	Pass	
LCS - % Recovery							
Organophosphorous Pesticides							
Diazinon	%	93			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethion	%	87			70-130	Pass	
Fenitrothion	%	90			70-130	Pass	
Methyl parathion	%	78			70-130	Pass	
Mevinphos	%	94			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	111			70-130	Pass	
LCS - % Recovery							
Semivolatile Organics							
1,2,4-Trichlorobenzene	%	87			70-130	Pass	
1,4-Dichlorobenzene	%	78			70-130	Pass	
2-Chlorophenol	%	80			30-130	Pass	
2,4-Dinitrotoluene	%	70			70-130	Pass	
4-Chloro-3-methylphenol	%	50			30-130	Pass	
4-Nitrophenol	%	79			30-130	Pass	
Acenaphthene	%	78			70-130	Pass	
N-Nitrosodipropylamine	%	71			70-130	Pass	
Phenol	%	30			30-130	Pass	
Pyrene	%	82			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	
Ammonia (as N)	%	96			70-130	Pass	
Chloride	%	105			70-130	Pass	
Nitrate & Nitrite (as N)	%	110			70-130	Pass	
Nitrate (as N)	%	110			70-130	Pass	
Nitrite (as N)	%	105			70-130	Pass	
Phosphate total (as P)	%	95			70-130	Pass	
Sulphate (as S)	%	98			70-130	Pass	
Total Dissolved Solids	%	96			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	117			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	94			80-120	Pass	
Aluminium (filtered)	%	97			80-120	Pass	
Arsenic	%	100			80-120	Pass	
Arsenic (filtered)	%	103			80-120	Pass	
Cadmium	%	104			70-130	Pass	
Cadmium (filtered)	%	92			80-120	Pass	
Chromium	%	101			80-120	Pass	
Chromium (filtered)	%	96			80-120	Pass	
Copper	%	104			80-120	Pass	
Copper (filtered)	%	87			80-120	Pass	
Iron	%	98			80-120	Pass	
Iron (filtered)	%	97			80-120	Pass	
Lead	%	104			80-120	Pass	
Lead (filtered)	%	95			80-120	Pass	
Manganese	%	97			80-120	Pass	
Manganese (filtered)	%	97			80-120	Pass	
Mercury	%	93			75-125	Pass	
Mercury (filtered)	%	93			70-130	Pass	
Nickel	%	103			80-120	Pass	
Nickel (filtered)	%	90			80-120	Pass	
Selenium	%	97			80-120	Pass	
Selenium (filtered)	%	94			80-120	Pass	

Test				Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Zinc				%	101		80-120	Pass	
Zinc (filtered)				%	94		80-120	Pass	
LCS - % Recovery									
Alkali Metals									
Calcium				%	89		70-130	Pass	
Magnesium				%	100		70-130	Pass	
Potassium				%	89		70-130	Pass	
Sodium				%	89		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M16-Fe17720	NCP	%	90		70-130	Pass		
Nitrate & Nitrite (as N)	M16-Fe17705	NCP	%	109		70-130	Pass		
Nitrate (as N)	M16-Fe17705	NCP	%	108		70-130	Pass		
Nitrite (as N)	M16-Fe17720	NCP	%	103		70-130	Pass		
Spike - % Recovery									
				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	S16-Fe16899	NCP	%	128		70-130	Pass		
Spike - % Recovery									
				Result 1					
Heavy Metals									
Arsenic	M16-Fe16419	NCP	%	93		75-125	Pass		
Chromium	M16-Fe16419	NCP	%	89		75-125	Pass		
Copper	M16-Fe16419	NCP	%	89		75-125	Pass		
Iron	M16-Fe21475	NCP	%	80		75-125	Pass		
Lead	M16-Fe16419	NCP	%	92		75-125	Pass		
Manganese	M16-Fe16419	NCP	%	93		75-125	Pass		
Mercury (filtered)	M16-Fe17772	NCP	%	97		70-130	Pass		
Nickel	M16-Fe16419	NCP	%	93		75-125	Pass		
Selenium	M16-Fe16419	NCP	%	92		75-125	Pass		
Zinc	M16-Fe16419	NCP	%	91		75-125	Pass		
Spike - % Recovery									
				Result 1					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions									
TRH C6-C9	M16-Fe16274	NCP	%	78		70-130	Pass		
TRH C10-C14	M16-Fe17885	NCP	%	130		70-130	Pass		
Spike - % Recovery									
				Result 1					
BTEX									
Benzene	M16-Fe16274	NCP	%	94		70-130	Pass		
Toluene	M16-Fe16274	NCP	%	84		70-130	Pass		
Ethylbenzene	M16-Fe16274	NCP	%	93		70-130	Pass		
m&p-Xylenes	M16-Fe16274	NCP	%	95		70-130	Pass		
o-Xylene	M16-Fe16274	NCP	%	86		70-130	Pass		
Xylenes - Total	M16-Fe16274	NCP	%	92		70-130	Pass		
Spike - % Recovery									
				Result 1					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
Naphthalene	M16-Fe16274	NCP	%	76		70-130	Pass		
TRH C6-C10	M16-Fe16274	NCP	%	70		70-130	Pass		
Spike - % Recovery									
				Result 1					
Organochlorine Pesticides									
4,4'-DDD	M16-Fe19728	NCP	%	106		70-130	Pass		
4,4'-DDE	M16-Fe19728	NCP	%	94		70-130	Pass		
4,4'-DDT	M16-Fe19728	NCP	%	72		70-130	Pass		
a-BHC	B16-Fe13498	NCP	%	105		70-130	Pass		
Aldrin	M16-Fe19728	NCP	%	84		70-130	Pass		
b-BHC	M16-Fe19728	NCP	%	72		70-130	Pass		

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
d-BHC	M16-Fe19728	NCP	%	96		70-130	Pass	
Dieldrin	M16-Fe19728	NCP	%	112		70-130	Pass	
Endosulfan I	M16-Fe19728	NCP	%	97		70-130	Pass	
Endosulfan II	M16-Fe19728	NCP	%	86		70-130	Pass	
Endosulfan sulphate	M16-Fe19728	NCP	%	90		70-130	Pass	
Endrin	M16-Fe19728	NCP	%	103		70-130	Pass	
Endrin aldehyde	M16-Fe19728	NCP	%	83		70-130	Pass	
Endrin ketone	M16-Fe19728	NCP	%	107		70-130	Pass	
γ-BHC (Lindane)	M16-Fe19728	NCP	%	93		70-130	Pass	
Heptachlor	M16-Fe19728	NCP	%	85		70-130	Pass	
Heptachlor epoxide	M16-Fe19728	NCP	%	80		70-130	Pass	
Hexachlorobenzene	B16-Fe13498	NCP	%	125		70-130	Pass	
Methoxychlor	M16-Fe19728	NCP	%	71		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-Fe17885	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Fe21475	NCP	%	90		75-125	Pass	
Mercury	M16-Fe16419	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Fe17816	CP	%	90		70-130	Pass	
Magnesium	M16-Fe17816	CP	%	94		70-130	Pass	
Potassium	M16-Fe17816	CP	%	90		70-130	Pass	
Sodium	M16-Fe17816	CP	%	96		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	M16-Fe17817	CP	%	89		70-130	Pass	
Cadmium (filtered)	M16-Fe17817	CP	%	87		70-130	Pass	
Chromium (filtered)	M16-Fe17817	CP	%	85		70-130	Pass	
Copper (filtered)	M16-Fe17817	CP	%	85		70-130	Pass	
Iron (filtered)	M16-Fe17817	CP	%	81		70-130	Pass	
Lead (filtered)	M16-Fe17817	CP	%	84		70-130	Pass	
Manganese (filtered)	M16-Fe17817	CP	%	84		70-130	Pass	
Nickel (filtered)	M16-Fe17817	CP	%	85		70-130	Pass	
Selenium (filtered)	M16-Fe17817	CP	%	87		70-130	Pass	
Zinc (filtered)	M16-Fe17817	CP	%	87		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Fe17822	CP	%	104		70-130	Pass	
Sulphate (as S)	M16-Fe17822	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe17826	CP	%	85		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe17826	CP	%	101		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Fe17826	CP	%	94		70-130	Pass	
Magnesium	M16-Fe17826	CP	%	99		70-130	Pass	
Potassium	M16-Fe17826	CP	%	95		70-130	Pass	
Sodium	M16-Fe17826	CP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic (filtered)	M16-Fe17827	CP	%	97			70-130	Pass	
Cadmium (filtered)	M16-Fe17827	CP	%	95			70-130	Pass	
Chromium (filtered)	M16-Fe17827	CP	%	90			70-130	Pass	
Copper (filtered)	M16-Fe17827	CP	%	94			70-130	Pass	
Lead (filtered)	M16-Fe17827	CP	%	94			70-130	Pass	
Manganese (filtered)	M16-Fe17827	CP	%	96			70-130	Pass	
Nickel (filtered)	M16-Fe17827	CP	%	93			70-130	Pass	
Selenium (filtered)	M16-Fe17827	CP	%	96			70-130	Pass	
Zinc (filtered)	M16-Fe17827	CP	%	96			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Fe16419	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Fe16419	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M16-Fe16419	NCP	mg/L	0.031	0.034	8.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Fe16313	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M16-Fe16907	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-Fe16907	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-Fe16907	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Fe16313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-Fe16313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-Fe16313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-Fe16313	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-Fe16313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-Fe16313	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Fe16313	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M16-Fe16313	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Fe19726	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4,4'-DDD	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4,4'-DDE	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4,4'-DDT	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
a-BHC	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Aldrin	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
b-BHC	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
d-BHC	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Dieldrin	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan I	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan II	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan sulphate	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin aldehyde	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin ketone	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
g-BHC (Lindane)	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor epoxide	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Hexachlorobenzene	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Methoxychlor	M16-Fe19726	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Toxaphene	M16-Fe19726	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-Fe16907	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-Fe16907	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-Fe16907	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Fe17674	NCP	NTU	6.9	7.0	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe17816	CP	mg/L	< 5	< 5	<1	30%	Pass
Magnesium	M16-Fe17816	CP	mg/L	11	12	3.0	30%	Pass
Potassium	M16-Fe17816	CP	mg/L	< 5	< 5	<1	30%	Pass
Sodium	M16-Fe17816	CP	mg/L	95	96	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe17817	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Fe17817	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Fe17817	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Fe17817	CP	mg/L	0.034	0.037	9.0	30%	Pass
Mercury (filtered)	M16-Fe17817	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Fe17817	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe17818	CP	mg/L	21	21	2.0	30%	Pass
Chromium	M16-Fe17818	CP	mg/L	0.026	0.030	14	30%	Pass
Copper	M16-Fe17818	CP	mg/L	0.006	0.006	11	30%	Pass
Iron	M16-Fe17818	CP	mg/L	23	23	2.0	30%	Pass
Lead	M16-Fe17818	CP	mg/L	0.026	0.033	25	30%	Pass
Mercury	M16-Fe17818	CP	mg/L	< 0.0001	0.0001	32	30%	Fail
Nickel	M16-Fe17818	CP	mg/L	0.018	0.018	4.0	30%	Pass
Selenium	M16-Fe17818	CP	mg/L	0.007	0.007	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe17821	CP	mg/L	2500	2500	<1	30%	Pass
Sulphate (as S)	M16-Fe17821	CP	mg/L	35	35	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe17822	CP	mg/L	1300	1300	<1	30%	Pass
Phosphorus reactive (as P)	M16-Fe17822	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Fe17822	CP	mg/L	27	28	1.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe17823	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-Fe17823	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Fe17823	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Fe17823	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe17824	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Fe17826	CP	uS/cm	300	310	3.0	30%	Pass
pH	M16-Fe17826	CP	pH Units	4.0	4.0	pass	30%	Pass
Phosphate total (as P)	M16-Fe17826	CP	mg/L	0.10	0.08	16	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Fe17826	CP	mg/L	1.0	0.9	8.3	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe17826	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe17826	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe17826	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe17826	CP	mg/L	1.6	1.6	2.0	30%	Pass
Magnesium	M16-Fe17826	CP	mg/L	5.6	5.8	3.0	30%	Pass
Potassium	M16-Fe17826	CP	mg/L	1.6	1.6	3.0	30%	Pass
Sodium	M16-Fe17826	CP	mg/L	32	32	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe17827	CP	mg/L	0.33	0.30	11	30%	Pass
Arsenic (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Fe17827	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Fe17827	CP	mg/L	0.26	0.24	8.0	30%	Pass
Lead (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Fe17827	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Fe17827	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Fe17827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Fe17827	CP	mg/L	0.007	0.007	13	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Fe17828	CP	mg/L	1700	1800	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe17828	CP	mg/L	2.5	2.4	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	No
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G02	The LORs have been raised as there was insufficient sample provided for analysis
M05	Sample submitted in non-sterile bottle
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 22, 2016 8:06 AM**
Eurofins | mgt reference: **489978**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **489978-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 22, 2016

Client Sample ID			MW16 Water	MW17 Water	MW18 Water	MW19 Water
Sample Matrix			M16-Fe20042	M16-Fe20043	M16-Fe20044	M16-Fe20045
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	44	31	37	210
Chloride	1	mg/L	84	32	75	97
Conductivity (at 25°C)	1	uS/cm	400	220	320	500
pH	0.1	pH Units	4.4	4.2	4.3	3.7
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	14	11	20
Total Dissolved Solids	10	mg/L	220	130	180	260
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.02	0.17	0.20
Nitrate (as N)	0.02	mg/L	2.0	0.22	0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.28	0.13	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	0.3	0.7
Total Nitrogen (as N)	0.2	mg/L	2	0.5	0.32	0.7
Heavy Metals						
Aluminium	0.05	mg/L	5.5	15	73	46
Aluminium (filtered)	0.05	mg/L	3.5	1.4	1.3	12
Arsenic	0.001	mg/L	< 0.001	0.002	0.005	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	0.007	0.023	0.086	0.077
Chromium (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	0.010	0.011
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.1	6.4	11	1.3
Iron (filtered)	0.05	mg/L	1.5	0.47	2.7	< 0.05
Lead	0.001	mg/L	0.018	0.079	0.10	0.070
Lead (filtered)	0.001	mg/L	0.010	0.002	0.003	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW16 Water	MW17 Water	MW18 Water	MW19 Water
Sample Matrix			M16-Fe20042	M16-Fe20043	M16-Fe20044	M16-Fe20045
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	0.0003	0.0010	0.0006
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.022	0.019
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.003	0.007
Selenium	0.001	mg/L	0.001	0.003	0.004	0.008
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.010	0.018	0.016
Zinc (filtered)	0.001	mg/L	0.003	0.004	0.009	0.010
Alkali Metals						
Calcium	0.5	mg/L	11	4.1	3.2	1.0
Magnesium	0.5	mg/L	5.1	3.8	6.4	3.0
Potassium	0.5	mg/L	1.2	1.1	1.6	< 0.5
Sodium	0.5	mg/L	31	22	38	45

Client Sample ID			MW20 Water	MW21 Water	MW22 Water	QC52 Water
Sample Matrix			M16-Fe20046	M16-Fe20047	M16-Fe20048	M16-Fe20049
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	59	130	59	-
Chloride	1	mg/L	80	100	76	-
Conductivity (at 25°C)	1	uS/cm	370	560	490	-
pH	0.1	pH Units	4.2	4.0	3.6	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	15	34	23	-
Total Dissolved Solids	10	mg/L	200	350	240	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.16	0.20	-
Nitrate (as N)	0.02	mg/L	0.22	0.08	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.22	0.14	0.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.4	-
Total Nitrogen (as N)	0.2	mg/L	0.5	0.38	0.4	-
Heavy Metals						
Aluminium	0.05	mg/L	26	42	5.2	< 0.05
Aluminium (filtered)	0.05	mg/L	7.4	8.4	3.5	-
Arsenic	0.001	mg/L	0.003	0.003	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Chromium	0.001	mg/L	0.020	0.034	0.006	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Copper	0.001	mg/L	0.005	0.005	0.003	< 0.001

Client Sample ID			MW20 Water	MW21 Water	MW22 Water	QC52 Water
Sample Matrix			M16-Fe20046	M16-Fe20047	M16-Fe20048	M16-Fe20049
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	0.001	0.002	0.002	-
Iron	0.05	mg/L	2.4	30	10	< 0.05
Iron (filtered)	0.05	mg/L	0.45	19	1.8	-
Lead	0.001	mg/L	0.027	0.018	0.005	< 0.001
Lead (filtered)	0.001	mg/L	0.006	0.004	0.002	-
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Mercury	0.0001	mg/L	0.0002	0.0003	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Nickel	0.001	mg/L	0.011	0.018	0.011	< 0.001
Nickel (filtered)	0.001	mg/L	0.007	0.013	0.010	-
Selenium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Zinc	0.001	mg/L	0.005	0.046	0.006	< 0.001
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.006	-
Alkali Metals						
Calcium	0.5	mg/L	< 0.5	5.3	12	-
Magnesium	0.5	mg/L	4.0	5.9	6.1	-
Potassium	0.5	mg/L	0.5	1.3	1.4	-
Sodium	0.5	mg/L	54	45	32	-

Client Sample ID			QC53 Water	MW24 Water	MW25 Water	MW26 Water
Sample Matrix			M16-Fe20050	M16-Fe20051	M16-Fe20052	M16-Fe20053
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	-	46	32	38
Chloride	1	mg/L	-	170	18	71
Conductivity (at 25°C)	1	uS/cm	-	700	230	340
pH	0.1	pH Units	-	4.3	4.3	4.6
Phosphate total (as P)	0.05	mg/L	-	0.05	< 0.05	< 0.05
Phosphorus filterable reactive (as P)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	24	9.7	13
Total Dissolved Solids	10	mg/L	-	430	150	270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.27	0.08	0.35
Nitrate (as N)	0.02	mg/L	-	0.02	13	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	0.7	1.1	2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.0	1.2	2.4
Total Nitrogen (as N)	0.2	mg/L	-	1	14	2.4

Client Sample ID			QC53 Water	MW24 Water	MW25 Water	MW26 Water
Sample Matrix			M16-Fe20050	M16-Fe20051	M16-Fe20052	M16-Fe20053
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	14	7.0	1.5
Aluminium (filtered)	0.05	mg/L	-	7.8	1.3	1.5
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	-	0.001	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	< 0.001	0.032	0.009	0.003
Chromium (filtered)	0.001	mg/L	-	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.009	0.004	0.002
Copper (filtered)	0.001	mg/L	-	0.002	< 0.001	0.002
Iron	0.05	mg/L	< 0.05	2.8	0.49	0.75
Iron (filtered)	0.05	mg/L	-	2.0	< 0.05	0.75
Lead	0.001	mg/L	< 0.001	0.017	0.007	< 0.001
Lead (filtered)	0.001	mg/L	-	0.006	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0004	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.008	0.004	0.001
Nickel (filtered)	0.001	mg/L	-	0.003	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	0.003	0.002	0.002
Selenium (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	< 0.001	0.009	0.005	0.006
Zinc (filtered)	0.001	mg/L	-	0.009	0.004	0.006
Alkali Metals						
Calcium	0.5	mg/L	-	6.5	8.2	3.4
Magnesium	0.5	mg/L	-	14	7.0	8.4
Potassium	0.5	mg/L	-	1.7	2.9	3.6
Sodium	0.5	mg/L	-	83	11	35

Client Sample ID			MW27 Water	MW28 Water	QC51 Water	MW23 Water
Sample Matrix			M16-Fe20054	M16-Fe20055	M16-Fe20056	M16-Fe20092
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	33	31	60	< 10
Chloride	1	mg/L	34	70	77	31
Conductivity (at 25°C)	1	uS/cm	190	340	340	270
pH	0.1	pH Units	4.2	4.5	4.1	6.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.10
Phosphorus filterable reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.7	9.9	11	10
Total Dissolved Solids	10	mg/L	200	300	180	180
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	47
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW27 Water	MW28 Water	QC51 Water	MW23 Water
Sample Matrix			M16-Fe20054	M16-Fe20055	M16-Fe20056	M16-Fe20092
Eurofins mgt Sample No.			Feb 19, 2016	Feb 19, 2016	Feb 19, 2016	Feb 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.26	0.17	0.17	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	3.2	0.03	4.0
Nitrite (as N)	0.02	mg/L	< 0.02	0.12	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	1.1	0.2	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	1.3	0.4	0.2
Total Nitrogen (as N)	0.2	mg/L	1.2	4.5	0.43	4.2
Heavy Metals						
Aluminium	0.05	mg/L	0.68	0.77	30	12
Aluminium (filtered)	0.05	mg/L	0.59	0.67	2.0	6.7
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0005	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	0.002	0.003	0.035	0.014
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Copper	0.001	mg/L	< 0.001	0.002	0.004	0.018
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.015
Iron	0.05	mg/L	0.46	0.11	7.8	2.8
Iron (filtered)	0.05	mg/L	0.20	0.08	0.40	1.8
Lead	0.001	mg/L	< 0.001	< 0.001	0.037	0.008
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	0.005
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.065
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.063
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0004	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.011	0.007
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.003
Selenium	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.003	0.007	0.039
Zinc (filtered)	0.001	mg/L	0.005	0.002	0.006	0.036
Alkali Metals						
Calcium	0.5	mg/L	3.2	3.1	3.2	27
Magnesium	0.5	mg/L	5.7	8.5	5.1	3.5
Potassium	0.5	mg/L	2.8	3.5	1.4	4.2
Sodium	0.5	mg/L	15	35	35	16

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 22, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 22, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 22, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 22, 2016	28 Day
Phosphorus filterable reactive (as P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Feb 22, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 22, 2016	7 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 23, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 23, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 23, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: MGT 1100A	Melbourne	Feb 22, 2016	28 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 22, 2016	28 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 22, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 23, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 22, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 22, 2016 8:06 AM
Address: 89-91 Burswood Road Burswood WA 6100	Report #: 489978	Due: Feb 29, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Client Manager: Natalie Krasselt

Sample Detail					Nitrogens (speciated)	Eurofins mgt Suite B11	Zinc (filtered)	Zinc	Total Dissolved Solids	Selenium (filtered)	Selenium	Phosphorus filterable reactive (as P)	Phosphate total (as P)	pH	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Lead (filtered)	Lead	Iron (filtered)	Iron	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium	Acidity (as CaCO3)		
Laboratory where analysis is conducted																																						
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217																																						
Brisbane Laboratory - NATA Site # 20794																																						
External Laboratory																																						
MW24	Feb 19, 2016		Water	M16-Fe20051	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW25	Feb 19, 2016		Water	M16-Fe20052	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW26	Feb 19, 2016		Water	M16-Fe20053	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW27	Feb 19, 2016		Water	M16-Fe20054	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW28	Feb 19, 2016		Water	M16-Fe20055	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
QC51	Feb 19, 2016		Water	M16-Fe20056	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW23	Feb 19, 2016		Water	M16-Fe20092	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0005			0.0005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	104			70-130	Pass	
Chloride	%	113			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Phosphate total (as P)	%	89			70-130	Pass		
Sulphate (as S)	%	100			70-130	Pass		
Total Dissolved Solids	%	90			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	95			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	115			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	100			80-120	Pass		
Arsenic (filtered)	%	100			80-120	Pass		
Cadmium	%	102			70-130	Pass		
Cadmium (filtered)	%	102			70-130	Pass		
Chromium	%	101			80-120	Pass		
Chromium (filtered)	%	99			80-120	Pass		
Copper	%	104			80-120	Pass		
Copper (filtered)	%	94			80-120	Pass		
Iron	%	98			80-120	Pass		
Iron (filtered)	%	98			80-120	Pass		
Lead	%	104			80-120	Pass		
Lead (filtered)	%	89			80-120	Pass		
Manganese	%	97			80-120	Pass		
Manganese (filtered)	%	99			80-120	Pass		
Mercury	%	93			75-125	Pass		
Mercury (filtered)	%	93			70-130	Pass		
Nickel	%	103			80-120	Pass		
Nickel (filtered)	%	95			80-120	Pass		
Selenium	%	97			80-120	Pass		
Selenium (filtered)	%	97			80-120	Pass		
Zinc	%	101			80-120	Pass		
Zinc (filtered)	%	101			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	99			70-130	Pass		
Magnesium	%	107			70-130	Pass		
Potassium	%	100			70-130	Pass		
Sodium	%	99			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Fe21083	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Fe20042	CP	%	95		70-130	Pass	
Nitrate (as N)	M16-Fe20042	CP	%	87		70-130	Pass	
Nitrite (as N)	M16-Fe20042	CP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe20042	CP	%	110		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic (filtered)	M16-Fe16846	NCP	%	100		70-130	Pass	
Chromium (filtered)	M16-Fe16846	NCP	%	97		70-130	Pass	
Copper (filtered)	M16-Fe16846	NCP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron (filtered)	M16-Fe16846	NCP	%	97			70-130	Pass	
Lead (filtered)	M16-Fe16846	NCP	%	99			70-130	Pass	
Manganese (filtered)	M16-Fe21206	NCP	%	98			70-130	Pass	
Mercury (filtered)	M16-Fe16846	NCP	%	89			70-130	Pass	
Nickel (filtered)	M16-Fe16846	NCP	%	94			70-130	Pass	
Selenium (filtered)	M16-Fe16846	NCP	%	95			70-130	Pass	
Zinc (filtered)	M16-Fe16846	NCP	%	96			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe20047	CP	%	103			70-130	Pass	
Phosphorus filterable reactive (as P)	M16-Fe20047	CP	%	95			70-130	Pass	
Sulphate (as S)	M16-Fe20047	CP	%	96			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe20047	CP	%	85			70-130	Pass	
Magnesium	M16-Fe20047	CP	%	88			70-130	Pass	
Potassium	M16-Fe20047	CP	%	86			70-130	Pass	
Sodium	M16-Fe20047	CP	%	87			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-Fe20053	CP	%	71			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Fe22104	NCP	%	102			75-125	Pass	
Chromium	M16-Fe22104	NCP	%	100			75-125	Pass	
Copper	M16-Fe22104	NCP	%	96			75-125	Pass	
Lead	M16-Fe22104	NCP	%	95			75-125	Pass	
Manganese	M16-Fe22104	NCP	%	99			75-125	Pass	
Mercury	M16-Fe22104	NCP	%	97			70-130	Pass	
Nickel	M16-Fe22104	NCP	%	98			75-125	Pass	
Selenium	M16-Fe22337	NCP	%	99			75-125	Pass	
Zinc	M16-Fe22104	NCP	%	99			75-125	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Fe20056	CP	%	95			70-130	Pass	
Nitrate (as N)	M16-Fe20056	CP	%	92			70-130	Pass	
Nitrite (as N)	M16-Fe20056	CP	%	96			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Fe20092	CP	%	96			70-130	Pass	
Nitrate (as N)	M16-Fe20092	CP	%	77			70-130	Pass	
Nitrite (as N)	M16-Fe20092	CP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Fe16374	NCP	mg/L	320	330	1.7	30%	Pass	
Conductivity (at 25°C)	M16-Fe20042	CP	uS/cm	400	400	<1	30%	Pass	
pH	M16-Fe20042	CP	pH Units	4.4	4.4	pass	30%	Pass	
Phosphate total (as P)	M16-Fe20042	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus filterable reactive (as P)	M16-Fe17811	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Fe17811	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Total Dissolved Solids	M16-Fe19728	NCP	mg/L	1100	1100	1.0	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe20042	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe20042	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe20042	CP	mg/L	0.06	0.06	2.0	30%	Pass
Nitrate (as N)	M16-Fe20042	CP	mg/L	2.0	2.0	<1	30%	Pass
Nitrite (as N)	M16-Fe20042	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Fe20042	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe20042	CP	mg/L	5.5	5.5	1.0	30%	Pass
Aluminium (filtered)	M16-Fe20042	CP	mg/L	3.5	3.6	2.0	30%	Pass
Arsenic (filtered)	M16-Fe16846	NCP	mg/L	0.002	0.002	6.0	30%	Pass
Chromium (filtered)	M16-Fe16846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Fe16846	NCP	mg/L	0.003	0.003	5.0	30%	Pass
Iron (filtered)	M16-Fe21206	NCP	mg/L	0.18	0.18	2.0	30%	Pass
Lead (filtered)	M16-Fe21206	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Fe21206	NCP	mg/L	0.036	0.036	<1	30%	Pass
Mercury (filtered)	M16-Fe16846	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Fe16846	NCP	mg/L	0.032	0.030	6.0	30%	Pass
Selenium (filtered)	M16-Fe16846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Fe16846	NCP	mg/L	0.005	0.004	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe20043	CP	mg/L	31	30	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron	S16-Fe18848	NCP	mg/L	43	44	1.0	30%	Pass
Lead	S16-Fe20409	NCP	mg/L	1.4	1.5	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Fe20045	CP	uS/cm	500	500	<1	30%	Pass
pH	M16-Fe20045	CP	pH Units	3.7	3.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe20045	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe20045	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe20047	CP	mg/L	5.3	5.1	4.0	30%	Pass
Magnesium	M16-Fe20047	CP	mg/L	5.9	5.9	<1	30%	Pass
Potassium	M16-Fe20047	CP	mg/L	1.3	1.3	3.0	30%	Pass
Sodium	M16-Fe20047	CP	mg/L	45	46	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe20051	CP	mg/L	46	45	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe20052	CP	mg/L	1.3	1.2	9.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Fe20053	CP	mg/L	2.4	2.1	15	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M16-Fe22104	NCP	mg/L	0.009	0.010	4.0	30%	Pass
Chromium	M16-Fe17818	NCP	mg/L	0.026	0.030	14	30%	Pass
Copper	M16-Fe17818	NCP	mg/L	0.006	0.006	11	30%	Pass
Manganese	M16-Fe22104	NCP	mg/L	0.032	0.033	3.0	30%	Pass
Mercury	M16-Fe17818	NCP	mg/L	< 0.0001	0.0001	32	30%	Fail
Nickel	M16-Fe17818	NCP	mg/L	0.018	0.018	4.0	30%	Pass
Selenium	M16-Fe17818	NCP	mg/L	0.007	0.007	8.0	30%	Pass
Zinc	M16-Fe22104	NCP	mg/L	0.007	0.007	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe20054	CP	mg/L	0.68	0.67	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe20056	CP	mg/L	0.17	0.17	2.0	30%	Pass
Nitrate (as N)	M16-Fe20056	CP	mg/L	0.03	0.03	1.0	30%	Pass
Nitrite (as N)	M16-Fe20056	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe20092	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate (as N)	M16-Fe20092	CP	mg/L	4.0	4.0	1.0	30%	Pass
Nitrite (as N)	M16-Fe20092	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 23, 2016 8:29 AM**
Eurofins | mgt reference: **490092**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

ON COC, CA USED FOR CADMIUM WHEN PROPER SYMBOL FOR CADMIUM IS CD. PROJECT NAME WAS NOT PROPERLY TYPED INTO COC. PLEASE ADVISE IF THE ACTUAL PROJECT NAME IS DIFFERENT TO 'NL_BASELINE GW_SW MONITORING'.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **490092-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 23, 2016

Client Sample ID			MW42 Water	MW39 Water	MW38 Water	MW37 Water
Sample Matrix			M16-Fe20958	M16-Fe20959	M16-Fe20960	M16-Fe20961
Eurofins mgt Sample No.			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	28	< 10	25	< 10
Ammonia (as N)	0.01	mg/L	0.28	1.3	0.83	1.0
Chloride	1	mg/L	49	74	150	23
Conductivity (at 25°C)	1	uS/cm	200	430	530	140
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	4.4	7.5	6.8	6.4
Phosphate total (as P)	0.05	mg/L	< 0.05	1.0	0.58	0.66
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	1.1	0.36	0.44
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 190	240	^{Q19} 430	^{Q19} 110
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	1.3	2.7	2.4
Total Nitrogen (as N)	0.2	mg/L	0.7	1.3	2.7	2.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	74	48	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	1.0	0.07	7.3	0.31
Aluminium (filtered)	0.05	mg/L	0.37	< 0.05	0.29	0.19
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.002	0.005	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.002	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.26	0.13	5.3	0.14
Iron (filtered)	0.05	mg/L	0.15	< 0.05	0.44	0.05
Lead	0.001	mg/L	0.006	< 0.001	0.008	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.013	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.012	< 0.005	< 0.005

Client Sample ID			MW42 Water	MW39 Water	MW38 Water	MW37 Water
Sample Matrix			M16-Fe20958	M16-Fe20959	M16-Fe20960	M16-Fe20961
Eurofins mgt Sample No.			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.005	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.006	0.035	0.009
Zinc (filtered)	0.001	mg/L	0.006	0.003	0.004	0.006
Alkali Metals						
Calcium	0.5	mg/L	1.6	18	22	8.4
Magnesium	0.5	mg/L	4.4	7.5	9.9	2.5
Potassium	0.5	mg/L	1.0	17	15	2.1
Sodium	0.5	mg/L	24	38	66	11

Client Sample ID			MW36 Water	MW35 Water	MW34 Water	MW33 Water
Sample Matrix			M16-Fe20962	M16-Fe20963	M16-Fe20964	M16-Fe20965
Eurofins mgt Sample No.			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	51	28	< 10
Ammonia (as N)	0.01	mg/L	0.03	0.64	0.17	0.50
Chloride	1	mg/L	15	58	82	67
Conductivity (at 25°C)	1	uS/cm	120	270	330	360
Nitrate & Nitrite (as N)	0.05	mg/L	2.5	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	2.4	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	6.9	4.4	5.5	7.1
Phosphate total (as P)	0.05	mg/L	0.13	0.74	0.79	0.09
Phosphorus reactive (as P)	0.05	mg/L	0.12	0.68	0.58	< 0.05
Sulphate (as S)	5	mg/L	< 5	9.6	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 110	^{Q19} 390	^{Q19} 410	240
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	4.1	3.3	1.1
Total Nitrogen (as N)	0.2	mg/L	2.8	4.1	3.3	1.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	65
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	0.14	0.37	2.0	1.6
Aluminium (filtered)	0.05	mg/L	< 0.05	0.28	0.80	0.19
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	0.004	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.002	< 0.001

Client Sample ID			MW36	MW35	MW34	MW33
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe20962	M16-Fe20963	M16-Fe20964	M16-Fe20965
Date Sampled			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.05	0.14	11	1.2
Iron (filtered)	0.05	mg/L	< 0.05	0.11	3.2	0.09
Lead	0.001	mg/L	0.001	< 0.001	0.003	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.030	0.010
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.006	0.021	0.007
Zinc (filtered)	0.001	mg/L	0.003	0.006	0.006	0.002
Alkali Metals						
Calcium	0.5	mg/L	12	11	10	25
Magnesium	0.5	mg/L	1.8	4.6	5.7	5.0
Potassium	0.5	mg/L	0.5	9.5	9.1	3.2
Sodium	0.5	mg/L	7.2	25	38	33

Client Sample ID			MW32	MW31	MW30	MW29
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe20966	M16-Fe20967	M16-Fe20968	M16-Fe20969
Date Sampled			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	16	26	24	24
Ammonia (as N)	0.01	mg/L	0.40	0.21	0.02	0.23
Chloride	1	mg/L	120	63	28	48
Conductivity (at 25°C)	1	uS/cm	490	250	120	270
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	2.6	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	2.6	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	6.1	5.6	4.0	4.9
Phosphate total (as P)	0.05	mg/L	0.41	0.18	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.38	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	5.5	< 5	< 5	17
Total Dissolved Solids	10	mg/L	^{Q19} 370	^{Q19} 190	79	^{Q19} 270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	1.0	< 0.2	1.0
Total Nitrogen (as N)	0.2	mg/L	1.7	1.0	2.6	1.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW32 Water	MW31 Water	MW30 Water	MW29 Water
Sample Matrix			M16-Fe20966	M16-Fe20967	M16-Fe20968	M16-Fe20969
Eurofins mgt Sample No.			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.1	7.2	0.82	2.5
Aluminium (filtered)	0.05	mg/L	0.35	0.44	0.49	0.81
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.004	0.002	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.35	0.59	0.11	0.70
Iron (filtered)	0.05	mg/L	0.20	0.22	< 0.05	0.33
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.018	0.030	0.038	0.013
Zinc (filtered)	0.001	mg/L	0.006	0.002	0.038	0.009
Alkali Metals						
Calcium	0.5	mg/L	8.8	3.3	3.5	7.5
Magnesium	0.5	mg/L	6.2	5.1	2.8	11
Potassium	0.5	mg/L	6.0	2.4	0.8	2.2
Sodium	0.5	mg/L	62	33	15	29

Client Sample ID			SWL15-1 Water	SWL15-2 Water	QC54 Water	QC55 Water
Sample Matrix			M16-Fe20970	M16-Fe20971	M16-Fe20972	M16-Fe20973
Eurofins mgt Sample No.			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	22	21	-	-
Ammonia (as N)	0.01	mg/L	0.04	0.02	-	-
Chloride	1	mg/L	91	95	-	-
Conductivity (at 25°C)	1	uS/cm	350	360	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
pH	0.1	pH Units	5.3	5.1	-	-
Phosphate total (as P)	0.05	mg/L	0.37	0.38	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.29	0.31	-	-
Sulphate (as S)	5	mg/L	< 5	< 5	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 330	^{Q19} 330	-	-

Client Sample ID			SWL15-1	SWL15-2	QC54	QC55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe20970	M16-Fe20971	M16-Fe20972	M16-Fe20973
Date Sampled			Feb 22, 2016	Feb 22, 2016	Feb 22, 2016	Feb 22, 2016
Test/Reference	LOR	Unit				
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	1.6	-	-
Total Nitrogen (as N)	0.2	mg/L	1.7	1.6	-	-
Turbidity	1	NTU	330	160	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Heavy Metals						
Aluminium	0.05	mg/L	1.4	1.4	-	-
Aluminium (filtered)	0.05	mg/L	0.62	0.64	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00011	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.003	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.91	0.75	-	-
Iron (filtered)	0.05	mg/L	0.36	0.32	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.013	0.012	-	-
Manganese (filtered)	0.005	mg/L	0.008	0.008	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.017	0.015	-	-
Zinc (filtered)	0.001	mg/L	0.007	0.011	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	6.2	5.6	-	-
Magnesium	0.5	mg/L	7.7	7.0	-	-
Potassium	0.5	mg/L	4.4	4.1	-	-
Sodium	0.5	mg/L	45	43	-	-
Pathogens						
E.coli	1	MPN/100mL	230	330	-	-
Thermotolerant Coliforms	1	MPN/100mL	>16000	1700	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 23, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 23, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 25, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 23, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 23, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 25, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 25, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 23, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 24, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 23, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 23, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 23, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 23, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 23, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 23, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 23, 2016	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	98			70-130	Pass	
Ammonia (as N)	%	94			70-130	Pass	
Chloride	%	108			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Nitrate & Nitrite (as N)	%	91	70-130	Pass			
Nitrate (as N)	%	91	70-130	Pass			
Nitrite (as N)	%	99	70-130	Pass			
Phosphate total (as P)	%	94	70-130	Pass			
Sulphate (as S)	%	94	70-130	Pass			
Total Dissolved Solids	%	90	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	100	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Arsenic	%	86	80-120	Pass			
Arsenic (filtered)	%	86	80-120	Pass			
Cadmium	%	102	70-130	Pass			
Chromium	%	99	80-120	Pass			
Chromium (filtered)	%	101	80-120	Pass			
Copper	%	94	80-120	Pass			
Copper (filtered)	%	104	80-120	Pass			
Iron	%	85	80-120	Pass			
Iron (filtered)	%	98	80-120	Pass			
Lead	%	89	80-120	Pass			
Lead (filtered)	%	104	80-120	Pass			
Manganese	%	99	80-120	Pass			
Manganese (filtered)	%	97	80-120	Pass			
Mercury	%	85	75-125	Pass			
Mercury (filtered)	%	85	70-130	Pass			
Nickel	%	95	80-120	Pass			
Nickel (filtered)	%	103	80-120	Pass			
Selenium	%	85	80-120	Pass			
Selenium (filtered)	%	85	80-120	Pass			
Zinc	%	88	80-120	Pass			
Zinc (filtered)	%	101	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	107	70-130	Pass			
Magnesium	%	112	70-130	Pass			
Potassium	%	99	70-130	Pass			
Sodium	%	104	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Ammonia (as N)	M16-Fe20719	NCP	%	95	70-130	Pass	
Nitrate & Nitrite (as N)	M16-Fe20719	NCP	%	91	70-130	Pass	
Nitrate (as N)	M16-Fe20719	NCP	%	91	70-130	Pass	
Nitrite (as N)	M16-Fe20719	NCP	%	100	70-130	Pass	
Phosphate total (as P)	M16-Fe21083	NCP	%	92	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe20042	NCP	%	110	70-130	Pass	
Spike - % Recovery							
Alkalinity (speciated)				Result 1			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe21156	NCP	%	92	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic (filtered)	M16-Fe20984	NCP	%	99	70-130	Pass	
Cadmium	S16-Fe23029	NCP	%	92	70-130	Pass	
Chromium (filtered)	M16-Fe20984	NCP	%	97	70-130	Pass	
Copper (filtered)	M16-Fe20984	NCP	%	94	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron (filtered)	M16-Fe20984	NCP	%	95			70-130	Pass	
Lead (filtered)	M16-Fe20984	NCP	%	96			70-130	Pass	
Manganese (filtered)	M16-Fe20984	NCP	%	97			70-130	Pass	
Mercury (filtered)	M16-Fe20984	NCP	%	96			70-130	Pass	
Nickel (filtered)	M16-Fe20984	NCP	%	95			70-130	Pass	
Selenium (filtered)	M16-Fe20984	NCP	%	100			70-130	Pass	
Zinc (filtered)	M16-Fe20984	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe20958	CP	%	97			70-130	Pass	
Magnesium	M16-Fe20958	CP	%	102			70-130	Pass	
Potassium	M16-Fe20958	CP	%	90			70-130	Pass	
Sodium	M16-Fe20958	CP	%	96			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe20959	CP	%	106			70-130	Pass	
Sulphate (as S)	M16-Fe20959	CP	%	93			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe20968	CP	%	96			70-130	Pass	
Magnesium	M16-Fe20968	CP	%	94			70-130	Pass	
Potassium	M16-Fe20968	CP	%	89			70-130	Pass	
Sodium	M16-Fe20968	CP	%	94			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe20970	CP	%	104			70-130	Pass	
Phosphorus reactive (as P)	M16-Fe20970	CP	%	101			70-130	Pass	
Sulphate (as S)	M16-Fe20970	CP	%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Fe20654	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Conductivity (at 25°C)	M16-Fe20958	CP	uS/cm	200	210	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Fe20719	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Fe20719	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Fe20654	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M16-Fe20958	CP	pH Units	4.4	4.4	pass	30%	Pass	
Phosphate total (as P)	M16-Fe20042	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Fe20717	NCP	mg/L	4200	4400	6.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe20042	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe20958	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Fe20958	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe20958	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Fe20958	CP	mg/L	1.0	1.1	6.0	30%	Pass	
Aluminium (filtered)	M16-Fe20958	CP	mg/L	0.37	0.42	13	30%	Pass	
Arsenic (filtered)	M16-Fe20984	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Cadmium	S16-Fe23028	NCP	mg/L	0.0030	0.0032	8.0	30%	Pass	
Chromium (filtered)	M16-Fe20984	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Copper (filtered)	M16-Fe20984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Fe20984	NCP	mg/L	0.002	0.002	1.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Manganese (filtered)	M16-Fe20984	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Fe20984	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Fe20984	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Fe20984	NCP	mg/L	0.002	0.002	8.0	30%	Pass
Zinc (filtered)	M16-Fe20984	NCP	mg/L	0.003	0.003	7.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe20958	CP	mg/L	1.6	1.6	<1	30%	Pass
Magnesium	M16-Fe20958	CP	mg/L	4.4	4.6	3.0	30%	Pass
Potassium	M16-Fe20958	CP	mg/L	1.0	1.0	4.0	30%	Pass
Sodium	M16-Fe20958	CP	mg/L	24	25	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe20959	CP	mg/L	74	74	1.1	30%	Pass
Phosphorus reactive (as P)	M16-Fe20959	CP	mg/L	1.1	1.1	<1	30%	Pass
Sulphate (as S)	M16-Fe20959	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe20960	CP	mg/L	25	27	8.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead	S16-Fe20409	NCP	mg/L	1.4	1.5	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe20967	CP	mg/L	26	26	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Fe20968	CP	uS/cm	120	200	2.0	30%	Pass
pH	M16-Fe20968	CP	pH Units	4.0	4.0	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe20968	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Fe20968	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Fe20968	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe20968	CP	mg/L	0.82	0.86	4.0	30%	Pass
Aluminium (filtered)	M16-Fe20968	CP	mg/L	0.49	0.50	4.0	30%	Pass
Iron	M16-Fe20968	CP	mg/L	0.11	0.09	19	30%	Pass
Iron (filtered)	M16-Fe20968	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe20968	CP	mg/L	3.5	3.5	<1	30%	Pass
Magnesium	M16-Fe20968	CP	mg/L	2.8	2.7	1.0	30%	Pass
Potassium	M16-Fe20968	CP	mg/L	0.8	0.7	4.0	30%	Pass
Sodium	M16-Fe20968	CP	mg/L	15	15	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe20970	CP	mg/L	91	92	<1	30%	Pass
Phosphorus reactive (as P)	M16-Fe20970	CP	mg/L	0.29	0.30	2.5	30%	Pass
Sulphate (as S)	M16-Fe20970	CP	mg/L	< 5	< 5	<1	30%	Pass
Turbidity	M16-Fe20454	NCP	NTU	1.7	1.7	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 24, 2016 8:21 AM**
Eurofins | mgt reference: **490272**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

ON COC, CA USED FOR CADMIUM WHEN PROPER SYMBOL FOR CADMIUM IS CD

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **490272-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 24, 2016

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-Fe22373	M16-Fe22374	M16-Fe22375	M16-Fe22376
Eurofins mgt Sample No.			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	21	28	38	32
Ammonia (as N)	0.01	mg/L	0.21	0.02	0.08	0.04
Chloride	1	mg/L	43	31	67	45
Conductivity (at 25°C)	1	uS/cm	280	190	280	220
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	2.0	0.08	0.09
Nitrate (as N)	0.02	mg/L	0.05	2.0	0.07	0.09
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	4.6	4.3	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.18	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	16	6.3	13	12
Total Dissolved Solids	10	mg/L	190	^{Q19} 340	170	150
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.9	0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.4	2.9	0.3	< 0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	7.9	38	16	5.1
Aluminium (filtered)	0.05	mg/L	< 0.05	0.58	2.4	3.0
Arsenic	0.001	mg/L	< 0.001	0.003	0.004	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.013	0.044	0.015	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	8.5	8.1	13	5.3
Iron (filtered)	0.05	mg/L	6.4	0.93	0.45	2.7
Lead	0.001	mg/L	0.011	0.049	0.011	< 0.001
Lead (filtered)	0.001	mg/L	0.001	0.002	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-Fe22373	M16-Fe22374	M16-Fe22375	M16-Fe22376
Eurofins mgt Sample No.			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	0.0005	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.004	0.006	0.006
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.005
Selenium	0.001	mg/L	< 0.001	0.003	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.009	0.11	0.003
Zinc (filtered)	0.001	mg/L	0.004	0.005	0.11	0.003
Alkali Metals						
Calcium	0.5	mg/L	5.2	7.4	4.3	1.0
Magnesium	0.5	mg/L	8.7	4.2	5.4	4.5
Potassium	0.5	mg/L	1.7	0.7	1.2	0.7
Sodium	0.5	mg/L	27	18	33	28

Client Sample ID			MW11 Water	MW10 Water	MW8 Water	MW7 Water
Sample Matrix			M16-Fe22377	M16-Fe22378	M16-Fe22379	M16-Fe22380
Eurofins mgt Sample No.			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	48	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.10	^{R09} 0.55	0.02	0.11
Chloride	1	mg/L	130	28	15	14
Conductivity (at 25°C)	1	uS/cm	710	290	140	120
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	2.6	5.7	2.2
Nitrate (as N)	0.02	mg/L	0.06	2.6	5.6	2.2
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	4.3	6.9	6.1	5.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	46	9.6	< 5	9.4
Total Dissolved Solids	10	mg/L	480	^{Q19} 230	^{Q19} 110	79
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	^{R09} 0.5	0.7	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.4	3.1	6.4	2.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	69	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	12	4.0	6.4	2.6
Aluminium (filtered)	0.05	mg/L	3.7	0.08	0.07	0.40
Arsenic	0.001	mg/L	0.003	0.004	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.011	0.009	0.011	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.005	< 0.001

Client Sample ID			MW11 Water	MW10 Water	MW8 Water	MW7 Water
Sample Matrix			M16-Fe22377	M16-Fe22378	M16-Fe22379	M16-Fe22380
Eurofins mgt Sample No.			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Iron	0.05	mg/L	12	15	0.17	2.2
Iron (filtered)	0.05	mg/L	6.4	2.8	< 0.05	0.72
Lead	0.001	mg/L	0.020	0.003	0.007	0.003
Lead (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.015	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.013	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.010	0.003	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.008	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.006	0.008	0.019
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.003	0.019
Alkali Metals						
Calcium	0.5	mg/L	1.4	40	13	7.5
Magnesium	0.5	mg/L	27	5.1	1.8	2.3
Potassium	0.5	mg/L	0.7	1.9	0.7	2.2
Sodium	0.5	mg/L	80	13	10	9.8

Client Sample ID			MW5 Water	SWL1-1 Water	QC56 Water	QC57 Water
Sample Matrix			M16-Fe22381	M16-Fe22382	M16-Fe22383	M16-Fe22384
Eurofins mgt Sample No.			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	28	< 10	-	-
Ammonia (as N)	0.01	mg/L	0.81	0.04	-	-
Chloride	1	mg/L	39	98	-	-
Conductivity (at 25°C)	1	uS/cm	170	500	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.12	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	0.11	-	-
Nitrite (as N)	0.02	mg/L	0.05	< 0.02	-	-
pH	0.1	pH Units	5.5	7.1	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	< 5	16	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 130	320	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.5	-	-
Total Nitrogen (as N)	0.2	mg/L	1.4	0.6	-	-
Turbidity	1	NTU	-	3.7	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	39	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-

Client Sample ID			MW5	SWL1-1	QC56	QC57
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe22381	M16-Fe22382	M16-Fe22383	M16-Fe22384
Date Sampled			Feb 23, 2016	Feb 23, 2016	Feb 23, 2016	Feb 23, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	17	< 0.05	-	-
Aluminium (filtered)	0.05	mg/L	1.1	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.012	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.006	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.59	0.21	-	-
Iron (filtered)	0.05	mg/L	0.26	0.10	< 0.05	< 0.05
Lead	0.001	mg/L	0.009	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.014	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	0.013	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.010	0.015	-	-
Zinc (filtered)	0.001	mg/L	0.003	0.015	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	1.1	16	-	-
Magnesium	0.5	mg/L	4.6	12	-	-
Potassium	0.5	mg/L	0.8	5.0	-	-
Sodium	0.5	mg/L	25	56	-	-
Pathogens						
E.coli	1	MPN/100mL	-	94	-	-
Thermotolerant Coliforms	1	MPN/100mL	-	>1600	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 24, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 24, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 25, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 24, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 24, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 24, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 25, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 25, 2016	28 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 24, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 29, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 24, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 24, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 24, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 24, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 24, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 24, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 24, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 24, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 24, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	98			70-130	Pass	
Ammonia (as N)	%	94			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	113			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Phosphate total (as P)	%	93			70-130	Pass		
Sulphate (as S)	%	98			70-130	Pass		
Total Dissolved Solids	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	118			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	96			80-120	Pass		
Cadmium	%	97			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	92			80-120	Pass		
Chromium (filtered)	%	99			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	93			80-120	Pass		
Iron (filtered)	%	96			80-120	Pass		
Lead	%	94			80-120	Pass		
Lead (filtered)	%	100			80-120	Pass		
Manganese	%	96			80-120	Pass		
Manganese (filtered)	%	96			80-120	Pass		
Mercury	%	91			75-125	Pass		
Mercury (filtered)	%	102			70-130	Pass		
Nickel	%	94			80-120	Pass		
Nickel (filtered)	%	98			80-120	Pass		
Selenium	%	96			80-120	Pass		
Selenium (filtered)	%	98			80-120	Pass		
Zinc	%	98			80-120	Pass		
Zinc (filtered)	%	101			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	105			70-130	Pass		
Magnesium	%	111			70-130	Pass		
Potassium	%	101			70-130	Pass		
Sodium	%	100			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Fe21206	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Fe21243	NCP	%	92		70-130	Pass	
Nitrate (as N)	M16-Fe21243	NCP	%	92		70-130	Pass	
Nitrite (as N)	M16-Fe21243	NCP	%	99		70-130	Pass	
Phosphate total (as P)	M16-Fe22459	NCP	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe22459	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Fe22104	NCP	%	102		75-125	Pass	
Arsenic (filtered)	M16-Fe22095	NCP	%	93		70-130	Pass	
Cadmium	S16-Fe26005	NCP	%	99		70-130	Pass	
Chromium	M16-Fe22104	NCP	%	100		75-125	Pass	
Chromium (filtered)	M16-Fe22095	NCP	%	89		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	M16-Fe22104	NCP	%	96			75-125	Pass	
Copper (filtered)	M16-Fe22095	NCP	%	88			70-130	Pass	
Lead	M16-Fe22104	NCP	%	95			75-125	Pass	
Lead (filtered)	M16-Fe22095	NCP	%	88			70-130	Pass	
Manganese	M16-Fe22104	NCP	%	99			75-125	Pass	
Manganese (filtered)	M16-Fe22337	NCP	%	97			70-130	Pass	
Mercury	M16-Fe22104	NCP	%	97			70-130	Pass	
Mercury (filtered)	M16-Fe22095	NCP	%	84			70-130	Pass	
Nickel	M16-Fe22104	NCP	%	98			75-125	Pass	
Nickel (filtered)	M16-Fe22095	NCP	%	84			70-130	Pass	
Selenium	M16-Fe22337	NCP	%	99			75-125	Pass	
Selenium (filtered)	M16-Fe22095	NCP	%	94			70-130	Pass	
Zinc	M16-Fe22104	NCP	%	99			75-125	Pass	
Zinc (filtered)	M16-Fe22337	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	M16-Fe22374	CP	%	79			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M16-Fe23462	NCP	%	87			75-125	Pass	
Iron (filtered)	M16-Fe22895	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe22378	CP	%	100			70-130	Pass	
Magnesium	M16-Fe22378	CP	%	96			70-130	Pass	
Potassium	M16-Fe22378	CP	%	89			70-130	Pass	
Sodium	M16-Fe22378	CP	%	111			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Fe22382	CP	%	106			70-130	Pass	
Phosphorus reactive (as P)	M16-Fe22382	CP	%	99			70-130	Pass	
Sulphate (as S)	M16-Fe22382	CP	%	97			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe22382	CP	%	98			70-130	Pass	
Magnesium	M16-Fe22382	CP	%	101			70-130	Pass	
Potassium	M16-Fe22382	CP	%	88			70-130	Pass	
Sodium	M16-Fe22382	CP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Fe22373	CP	uS/cm	280	280	1.0	30%	Pass	
pH	M16-Fe22373	CP	pH Units	4.6	4.7	pass	30%	Pass	
Phosphate total (as P)	M16-Fe22459	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Fe22036	NCP	mg/L	1700	1800	6.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe22459	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Fe22373	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Fe22373	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Fe22373	CP	mg/L	< 10	< 10	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Fe22373	CP	mg/L	7.9	8.2	4.0	30%	Pass
Arsenic	M16-Fe22104	NCP	mg/L	0.009	0.010	4.0	30%	Pass
Arsenic (filtered)	M16-Fe22095	NCP	mg/L	0.004	0.004	3.0	30%	Pass
Cadmium	S16-Fe23028	NCP	mg/L	0.0030	0.0032	8.0	30%	Pass
Chromium	M16-Fe22104	NCP	mg/L	0.003	0.003	6.0	30%	Pass
Chromium (filtered)	M16-Fe22095	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Fe22104	NCP	mg/L	0.002	0.002	<1	30%	Pass
Copper (filtered)	M16-Fe22095	NCP	mg/L	0.003	0.003	2.0	30%	Pass
Iron	M16-Fe22373	CP	mg/L	8.5	8.6	1.0	30%	Pass
Iron (filtered)	M16-Fe22095	NCP	mg/L	8.0	7.9	1.0	30%	Pass
Lead	M16-Fe22104	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Fe22095	NCP	mg/L	0.001	0.001	3.0	30%	Pass
Manganese	M16-Fe22104	NCP	mg/L	0.032	0.033	3.0	30%	Pass
Manganese (filtered)	M16-Fe22095	NCP	mg/L	0.38	0.37	2.0	30%	Pass
Mercury	M16-Fe22104	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Fe22095	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Fe22104	NCP	mg/L	0.010	0.010	5.0	30%	Pass
Nickel (filtered)	M16-Fe22095	NCP	mg/L	0.052	0.051	1.0	30%	Pass
Selenium	M16-Fe17818	NCP	mg/L	0.007	0.007	8.0	30%	Pass
Selenium (filtered)	M16-Fe22095	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Fe22104	NCP	mg/L	0.007	0.007	2.0	30%	Pass
Zinc (filtered)	M16-Fe22095	NCP	mg/L	0.30	0.30	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe22375	CP	mg/L	38	39	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Fe22378	CP	mg/L	0.55	0.54	2.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Fe22378	CP	mg/L	2.6	2.7	<1	30%	Pass
Nitrate (as N)	M16-Fe22378	CP	mg/L	2.6	2.7	<1	30%	Pass
Nitrite (as N)	M16-Fe22378	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Fe22382	CP	mg/L	98	99	1.5	30%	Pass
Phosphorus reactive (as P)	M16-Fe22382	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Fe22382	CP	mg/L	16	16	2.3	30%	Pass
Turbidity	M16-Fe23435	NCP	NTU	42	43	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Fe22382	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe22382	CP	mg/L	16	16	2.0	30%	Pass
Magnesium	M16-Fe22382	CP	mg/L	12	12	2.0	30%	Pass
Potassium	M16-Fe22382	CP	mg/L	5.0	5.1	3.0	30%	Pass
Sodium	M16-Fe22382	CP	mg/L	56	55	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R09	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPT04483AA MONITORING EVENT 2**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 25, 2016 8:21 AM**
Eurofins | mgt reference: **490559**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **490559-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA MONITORING EVENT 2
Received Date Feb 25, 2016

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Fe24369	M16-Fe24370	M16-Fe24371	M16-Fe24372
Eurofins mgt Sample No.			Feb 24, 2016	Feb 24, 2016	Feb 24, 2016	Feb 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	23	16	14
Ammonia (as N)	0.01	mg/L	0.04	0.04	0.01	0.15
Chloride	1	mg/L	290	2200	12000	750
Conductivity (at 25°C)	1	uS/cm	1000	7000	38000	2300
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	40	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.02	39	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.68	< 0.02
pH	0.1	pH Units	7.2	5.2	7.4	5.6
Phosphate total (as P)	0.05	mg/L	0.73	0.53	0.49	0.46
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	74	430	33
Total Dissolved Solids	10	mg/L	620	3900	24000	1300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.5	2.8	1.2	1.7
Total Nitrogen (as N)	0.2	mg/L	5.5	2.8	41	1.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	100	< 20	170	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	7.8	2.8	2.4	2.1
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.024	0.003	0.017	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.009	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00024	0.00041	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00023	0.00040	< 0.00005
Chromium	0.001	mg/L	0.020	0.003	0.006	0.009
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	0.001	0.003	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Iron	0.05	mg/L	110	6.5	2.8	8.4
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.041	0.009	0.010	0.005
Lead (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Manganese	0.005	mg/L	0.075	0.051	0.071	0.024
Manganese (filtered)	0.005	mg/L	0.033	0.046	0.036	0.019

Client Sample ID			MW54	MW53	MW52	MW51
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe24369	M16-Fe24370	M16-Fe24371	M16-Fe24372
Date Sampled			Feb 24, 2016	Feb 24, 2016	Feb 24, 2016	Feb 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	0.009	0.033	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	0.038	0.018	0.002
Selenium	0.001	mg/L	0.006	0.001	0.024	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.016	< 0.001
Zinc	0.001	mg/L	0.016	0.004	0.012	0.011
Zinc (filtered)	0.001	mg/L	0.002	0.008	0.007	0.010
Alkali Metals						
Calcium	0.5	mg/L	55	42	160	11
Magnesium	0.5	mg/L	21	180	700	50
Potassium	0.5	mg/L	7.9	17	130	8.9
Sodium	0.5	mg/L	140	1000	6300	380

Client Sample ID			MW50	M01 SWL21-1	M01 SWL21-2	M01 SWL21-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe24373	M16-Fe24374	M16-Fe24375	M16-Fe24376
Date Sampled			Feb 24, 2016	Feb 24, 2016	Feb 24, 2016	Feb 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	19	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.22	0.24	0.25	0.20
Chloride	1	mg/L	2900	3700	3600	3600
Conductivity (at 25°C)	1	uS/cm	8000	11000	11000	11000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	6.0	6.8	6.9	6.8
Phosphate total (as P)	0.05	mg/L	0.11	0.08	0.08	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	57	170	180	180
Total Dissolved Solids	10	mg/L	4400	6400	6700	6700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.0	4.0	4.0	3.9
Total Nitrogen (as N)	0.2	mg/L	2.0	4.0	4.0	3.9
Turbidity	1	NTU	-	17	23	29
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	24	24	25	24
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	10	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00050	0.00074	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00041	0.00070	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.032	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW50	M01 SWL21-1	M01 SWL21-2	M01 SWL21-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Fe24373	M16-Fe24374	M16-Fe24375	M16-Fe24376
Date Sampled			Feb 24, 2016	Feb 24, 2016	Feb 24, 2016	Feb 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	0.011	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	6.4	1.1	1.1	1.2
Iron (filtered)	0.05	mg/L	< 0.05	0.77	0.78	0.84
Lead	0.001	mg/L	0.088	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.022	0.13	0.13	0.13
Manganese (filtered)	0.005	mg/L	0.022	0.12	0.12	0.13
Mercury	0.0001	mg/L	0.0005	0.0002	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.008	0.008	0.007
Nickel (filtered)	0.001	mg/L	0.003	0.006	0.006	0.006
Selenium	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.020	0.010	0.006	0.008
Zinc (filtered)	0.001	mg/L	0.020	0.005	0.004	0.008
Alkali Metals						
Calcium	0.5	mg/L	29	50	49	48
Magnesium	0.5	mg/L	170	230	230	230
Potassium	0.5	mg/L	36	38	38	36
Sodium	0.5	mg/L	1300	1800	1800	1700
Pathogens						
E.coli	1	MPN/100mL	-	170	45	330
Thermotolerant Coliforms	1	MPN/100mL	-	>16000	>16000	>16000

Client Sample ID			QC58	QC59
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Fe24377	M16-Fe24378
Date Sampled			Feb 24, 2016	Feb 24, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Feb 26, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 26, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 26, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 26, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 25, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 29, 2016	2 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Feb 25, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 29, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 26, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 25, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 25, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Feb 25, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 26, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 26, 2016	24 Hour
Eurofins mgt Suite B11			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 26, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Feb 29, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 26, 2016	7 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Feb 29, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 25, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 26, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 26, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	99			70-130	Pass	
Ammonia (as N)	%	96			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	118			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Phosphate total (as P)	%	113			70-130	Pass		
Sulphate (as S)	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	115			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	97			80-120	Pass		
Arsenic (filtered)	%	97			80-120	Pass		
Cadmium	%	98			70-130	Pass		
Cadmium (filtered)	%	94			70-130	Pass		
Chromium	%	92			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	95			80-120	Pass		
Copper (filtered)	%	96			80-120	Pass		
Iron	%	91			80-120	Pass		
Iron (filtered)	%	95			80-120	Pass		
Lead	%	92			80-120	Pass		
Lead (filtered)	%	93			80-120	Pass		
Manganese	%	93			80-120	Pass		
Manganese (filtered)	%	99			80-120	Pass		
Mercury	%	83			75-125	Pass		
Mercury (filtered)	%	91			70-130	Pass		
Nickel	%	91			80-120	Pass		
Nickel (filtered)	%	95			80-120	Pass		
Selenium	%	99			80-120	Pass		
Selenium (filtered)	%	98			80-120	Pass		
Zinc	%	93			80-120	Pass		
Zinc (filtered)	%	96			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	111			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	103			70-130	Pass		
Sodium	%	108			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Fe24334	NCP	%	94		70-130	Pass	
Chloride	M16-Fe24369	CP	%	84		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Fe24334	NCP	%	95		70-130	Pass	
Nitrate (as N)	M16-Fe24334	NCP	%	95		70-130	Pass	
Nitrite (as N)	M16-Fe24334	NCP	%	100		70-130	Pass	
Phosphate total (as P)	M16-Fe24716	NCP	%	124		70-130	Pass	
Phosphorus reactive (as P)	M16-Fe24369	CP	%	91		70-130	Pass	
Sulphate (as S)	M16-Fe24369	CP	%	87		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe24963	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Fe24348	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M16-Fe24266	NCP	%	99			75-125	Pass	
Arsenic (filtered)	S16-Fe27097	NCP	%	103			70-130	Pass	
Cadmium	S16-Fe26005	NCP	%	99			70-130	Pass	
Cadmium (filtered)	S16-Ma01227	NCP	%	99			70-130	Pass	
Chromium	M16-Fe24266	NCP	%	89			75-125	Pass	
Chromium (filtered)	S16-Fe27097	NCP	%	99			70-130	Pass	
Copper	M16-Fe26621	NCP	%	99			75-125	Pass	
Copper (filtered)	S16-Fe27097	NCP	%	97			70-130	Pass	
Iron (filtered)	M16-Fe27170	NCP	%	95			70-130	Pass	
Lead	M16-Fe24266	NCP	%	85			75-125	Pass	
Lead (filtered)	S16-Fe27097	NCP	%	95			70-130	Pass	
Manganese	M16-Fe26621	NCP	%	101			75-125	Pass	
Manganese (filtered)	M16-Fe27170	NCP	%	84			70-130	Pass	
Mercury	M16-Fe26621	NCP	%	99			70-130	Pass	
Mercury (filtered)	S16-Fe27097	NCP	%	82			70-130	Pass	
Nickel	M16-Fe24266	NCP	%	93			75-125	Pass	
Nickel (filtered)	S16-Fe27097	NCP	%	95			70-130	Pass	
Selenium	M16-Fe24266	NCP	%	101			75-125	Pass	
Selenium (filtered)	S16-Fe27097	NCP	%	82			70-130	Pass	
Zinc	M16-Fe24266	NCP	%	89			75-125	Pass	
Zinc (filtered)	S16-Fe27097	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M16-Ma00292	NCP	%	94			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Fe24373	CP	%	98			70-130	Pass	
Magnesium	M16-Fe24373	CP	%	103			70-130	Pass	
Potassium	M16-Fe24373	CP	%	93			70-130	Pass	
Sodium	M16-Fe24373	CP	%	110			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Fe24334	NCP	mg/L	0.18	0.17	3.0	30%	Pass	
Chloride	M16-Fe24369	CP	mg/L	290	290	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Fe24334	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Fe24334	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Fe24334	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M16-Fe24369	CP	pH Units	7.2	7.2	pass	30%	Pass	
Phosphate total (as P)	M16-Fe24488	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Fe24369	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Fe24369	CP	mg/L	11	11	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Fe24716	NCP	mg/L	0.3	0.2	2.3	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Fe24369	CP	mg/L	100	98	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Fe24369	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Fe24369	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Fe24965	NCP	mg/L	1.5	1.5	4.0	30%	Pass	
Aluminium (filtered)	M16-Fe24932	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-Fe24266	NCP	mg/L	0.004	0.004	7.0	30%	Pass	
Arsenic (filtered)	S16-Fe27097	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	S16-Fe23028	NCP	mg/L	0.0030	0.0032	8.0	30%	Pass
Cadmium (filtered)	S16-Ma01916	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	M16-Fe24266	NCP	mg/L	0.086	0.081	6.0	30%	Pass
Chromium (filtered)	S16-Fe27097	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Fe24266	NCP	mg/L	0.37	0.36	4.0	30%	Pass
Copper (filtered)	S16-Fe27097	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Fe24266	NCP	mg/L	48	47	3.0	30%	Pass
Iron (filtered)	M16-Fe27170	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Fe24266	NCP	mg/L	0.15	0.14	6.0	30%	Pass
Lead (filtered)	S16-Fe27097	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Fe24266	NCP	mg/L	0.44	0.42	3.0	30%	Pass
Manganese (filtered)	S16-Fe27097	NCP	mg/L	0.57	0.58	1.0	30%	Pass
Mercury (filtered)	M16-Fe24263	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Fe24266	NCP	mg/L	0.020	0.020	3.0	30%	Pass
Nickel (filtered)	S16-Fe27097	NCP	mg/L	0.002	0.002	2.0	30%	Pass
Selenium	M16-Fe24266	NCP	mg/L	0.006	0.005	14	30%	Pass
Selenium (filtered)	S16-Fe27097	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Fe24266	NCP	mg/L	0.087	0.085	3.0	30%	Pass
Zinc (filtered)	S16-Fe27097	NCP	mg/L	0.009	0.009	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Fe24370	CP	mg/L	23	20	13	30%	Pass
Total Dissolved Solids	M16-Fe24370	CP	mg/L	3900	3500	5.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Mercury	M16-Fe24373	CP	mg/L	0.0005	0.0004	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Fe24373	CP	mg/L	29	29	1.0	30%	Pass
Magnesium	M16-Fe24373	CP	mg/L	170	170	<1	30%	Pass
Potassium	M16-Fe24373	CP	mg/L	36	35	2.0	30%	Pass
Sodium	M16-Fe24373	CP	mg/L	1300	1300	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Fe24994	NCP	NTU	110	110	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Fe24376	CP	mg/L	6700	6500	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M01	Microbiological Testing performed outside the recommended holding time

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- MW006: estimate (~) is reported where the growth of presumptive bacteria on the filtered membrane is counted <10 cfu and/or >100 cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC42	----	----	----	----
Client sampling date / time		[16-Feb-2016]			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1601309-001	-----	-----	-----	-----	-----
				Result	Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.42	----	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	336	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	216	----	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU	1.0	----	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	24	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	24	----	----	----	----	----
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	8	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	45	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	68	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	7	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	8	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	50	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	3	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	240	----	----	----	----	----
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	----
Chromium	7440-47-3	0.2	µg/L	0.7	----	----	----	----	----
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC42	----	----	----	----
Client sampling date / time				[16-Feb-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1601309-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	89	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	1.5	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	4	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	278	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	1.1	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	2.8	----	----	----	----	
Iron	7439-89-6	2	µg/L	117	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.4	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	2.2	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	----	----	----	----	
Zinc	7440-66-6	1	µg/L	7	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	<0.01	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC42	----	----	----	----
Client sampling date / time				[16-Feb-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1601309-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	~7	----	----	----	----	----
Escherichia coli	----	1	CFU/100mL	~7	----	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EP1601309	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 16-Feb-2016
C-O-C number	: ----	Date Analysis Commenced	: 17-Feb-2016
Sampler	: HARRIET CARTER	Issue Date	: 23-Feb-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 366213)									
EP1601232-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.72	7.77	0.646	0% - 20%
EP1601309-001	QC42	EA005-P: pH Value	----	0.01	pH Unit	7.42	7.34	1.08	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 366215)									
EP1601314-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2130	2170	1.82	0% - 20%
EP1601309-001	QC42	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	336	336	0.298	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 370701)									
EP1601312-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	406	407	0.369	0% - 20%
EP1601287-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1920	1920	0.365	0% - 20%
EA045: Turbidity (QC Lot: 364797)									
EP1601309-001	QC42	EA045: Turbidity	----	0.1	NTU	1.0	1.0	0.00	0% - 50%
EP1601329-009	Anonymous	EA045: Turbidity	----	0.1	NTU	0.3	0.3	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 366214)									
EP1601232-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	127	126	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	127	126	0.00	0% - 20%
EP1601309-001	QC42	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	24	29	18.1	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	24	29	18.1	0% - 20%
ED038A: Acidity (QC Lot: 370856)									
EP1601282-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	20	18	10.5	0% - 50%
EP1601282-011	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	11	11	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 364969)									
EP1601329-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	31	31	0.00	0% - 20%
EP1601309-001	QC42	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	45	46	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 364970)									
EP1601329-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	48	51	5.79	0% - 20%
EP1601309-001	QC42	ED045G: Chloride	16887-00-6	1	mg/L	68	68	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 365568)									
EP1601308-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	50	49	3.48	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	74	74	0.00	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 365568) - continued									
EP1601329-008	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	24	25	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	33	34	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	51	51	0.00	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 367587)									
EP1601240-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1603408-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 371923)									
EP1601309-001	QC42	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1603702-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 370460)									
EP1601309-001	QC42	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	89	88	0.00	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 370461)									
EP1601309-001	QC42	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.7	0.7	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1.5	1.5	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	4	4	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	240	240	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 366848)									
EP1601309-001	QC42	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	117	116	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 366849)									
EP1601309-001	QC42	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.4	0.3	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	1.1	1.1	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	2.8	1.0	91.9	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	2.2	2.1	0.00	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	7	4	61.7	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	278	278	0.00	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 364951)									
EP1601219-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.30	0.29	0.00	0% - 20%
EP1601311-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.05	0.05	0.00	No Limit

Page : 5 of 9
 Work Order : EP1601309
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 364971)									
EP1601329-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1601309-001	QC42	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 364952)									
EP1601219-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1601311-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.04	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 366152)									
EP1601287-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	61.0	59.4	2.50	0% - 20%
EP1601305-008	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.1	114	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 366151)									
EP1601287-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.15	1.16	0.00	0% - 20%
EP1601305-008	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.01	133	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 364972)									
EP1601309-001	QC42	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 366213)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 366215)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 370701)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.0	83	111	
				<10	293 mg/L	110	70	130	
EA045: Turbidity (QCLot: 364797)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.8	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 366214)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00	1	mg/L	<1	----	----	----	----	
	1								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	94.4	76	126	
				<1	200 mg/L	93.1	90	106	
ED038A: Acidity (QCLot: 370856)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	99.5	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 364969)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	89	113	
				<1	100 mg/L	88.5	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 364970)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	106	84	120	
				<1	1000 mg/L	100	84	110	
ED093F: Dissolved Major Cations (QCLot: 365568)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	101	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	95.8	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.2	87	111	
EG035F: Dissolved Mercury by FIMS (QCLot: 367587)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.7	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 371923)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.5	77	111	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 370460)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	106	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	114	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 370461)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	111	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	112	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	89.7	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	101	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	110	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	109	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	114	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	111	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	109	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 366848)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	106	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	89.4	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 366849)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	107	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	94.4	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	94.0	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	108	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	110	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	107	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	98.4	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	98.2	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	115	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 364951)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	104	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 364971)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 364952)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	109	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 366152)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.5	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 366151)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	88.3	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 364972)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	106	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 364969)							
EP1601309-001	QC42	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	104	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 364970)							
EP1601309-001	QC42	ED045G: Chloride	16887-00-6	1000 mg/L	116	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 367587)							
EP1601240-003	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	88.5	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 371923)							
ES1603531-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	72.6	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 370461)							
EP1601309-001	QC42	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	117	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	101	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	116	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	104	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	112	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	111	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 366849)							
ES1603445-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	124	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	108	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	104	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	130	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	108	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	89.5	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	120	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	118	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 364951)							
EP1601219-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	107	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 364971)							
EP1601309-001	QC42	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 364952)							
EP1601219-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	120	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 366152)							
EP1601287-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	# Not Determined	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 366151)							
EP1601287-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	124	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 364972)							
EP1601309-001	QC42	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	115	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1601309	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: NL_Baseline GW_SW Monitoring	Date Samples Received	: 16-Feb-2016
Site	: ----	Issue Date	: 23-Feb-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	EP1601287--001	Anonymous	Total Kjeldahl Nitrogen as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC42	----	----	----	18-Feb-2016	16-Feb-2016	2

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC42	16-Feb-2016	----	----	----	18-Feb-2016	16-Feb-2016	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC42	16-Feb-2016	----	----	----	18-Feb-2016	15-Mar-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC42	16-Feb-2016	----	----	----	22-Feb-2016	23-Feb-2016	✓
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045) QC42	16-Feb-2016	----	----	----	17-Feb-2016	18-Feb-2016	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC42	16-Feb-2016	----	----	----	18-Feb-2016	01-Mar-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC42	16-Feb-2016	----	----	----	22-Feb-2016	01-Mar-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	15-Mar-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	15-Mar-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC42	16-Feb-2016	----	----	----	18-Feb-2016	23-Feb-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC42	16-Feb-2016	----	----	----	23-Feb-2016	15-Mar-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) QC42	16-Feb-2016	----	----	----	23-Feb-2016	15-Mar-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG094A-F) QC42	16-Feb-2016	----	----	----	22-Feb-2016	14-Aug-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094A-T) QC42	16-Feb-2016	19-Feb-2016	14-Aug-2016	✓	19-Feb-2016	14-Aug-2016	✓
EG094B-F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG094B-F) QC42	16-Feb-2016	----	----	----	22-Feb-2016	14-Aug-2016	✓
EG094B-T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094B-T) QC42	16-Feb-2016	19-Feb-2016	14-Aug-2016	✓	19-Feb-2016	14-Aug-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	15-Mar-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	18-Feb-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	15-Mar-2016	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC42	16-Feb-2016	19-Feb-2016	15-Mar-2016	✓	22-Feb-2016	15-Mar-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC42	16-Feb-2016	19-Feb-2016	15-Mar-2016	✓	22-Feb-2016	15-Mar-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC42	16-Feb-2016	----	----	----	17-Feb-2016	18-Feb-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC42	16-Feb-2016	----	----	----	17-Feb-2016	17-Feb-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order	: EP1601429	Page	: 1 of 5
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 18-Feb-2016 16:45
C-O-C number	: ----	Date Analysis Commenced	: 19-Feb-2016
Sampler	: ----	Issue Date	: 25-Feb-2016 15:27
Site	: ----		
Quote number	: ----	No. of samples received	: 3
		No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC46	QC47	QC48	----	----
Client sampling date / time				[18-Feb-2016]	[18-Feb-2016]	[18-Feb-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1601429-001	EP1601429-002	EP1601429-003	-----	-----	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.61	8.07	7.45	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	1770	2270	2580	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1320	2900	1950	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	202	308	228	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	202	308	228	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	9	7	9	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	13	37	9	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	480	630	750	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	63	66	95	----	----	
Magnesium	7439-95-4	1	mg/L	37	45	59	----	----	
Sodium	7440-23-5	1	mg/L	221	314	337	----	----	
Potassium	7440-09-7	1	mg/L	6	6	8	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	0.0001	<0.0001	<0.0001	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	9	16	16	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.9	4.9	0.5	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Chromium	7440-47-3	0.2	µg/L	<0.2	0.3	0.9	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Iron	7439-89-6	2	µg/L	13	53	369	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC46	QC47	QC48	----	----
Client sampling date / time				[18-Feb-2016]	[18-Feb-2016]	[18-Feb-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1601429-001	EP1601429-002	EP1601429-003	-----	-----	
				Result	Result	Result	Result	Result	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Manganese	7439-96-5	0.5	µg/L	5.2	36.3	28.4	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	2.5	<0.5	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	1.5	<0.2	----	----	
Zinc	7440-66-6	1	µg/L	<1	<1	<1	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	21400	299000	12700	----	----	
Arsenic	7440-38-2	0.2	µg/L	51.8	224	8.3	----	----	
Cadmium	7440-43-9	0.05	µg/L	0.09	2.50	0.22	----	----	
Chromium	7440-47-3	0.2	µg/L	40.4	692	27.6	----	----	
Copper	7440-50-8	0.5	µg/L	7.2	152	31.5	----	----	
Iron	7439-89-6	2	µg/L	74700	192000	19700	----	----	
Lead	7439-92-1	0.1	µg/L	35.5	634	23.7	----	----	
Manganese	7439-96-5	0.5	µg/L	16.9	414	58.0	----	----	
Selenium	7782-49-2	0.2	µg/L	13.8	82.8	10.0	----	----	
Nickel	7440-02-0	0.5	µg/L	52.2	693	28.9	----	----	
Zinc	7440-66-6	1	µg/L	10	485	58	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.28	0.18	0.47	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.01	0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.02	0.01	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.9	1.4	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	1.9	1.4	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.40	0.06	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.07	0.02	----	----	
EN055: Ionic Balance									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC46	QC47	QC48	----	----
Client sampling date / time					[18-Feb-2016]	[18-Feb-2016]	[18-Feb-2016]	----	----
Compound	CAS Number	LOR	Unit		EP1601429-001	EP1601429-002	EP1601429-003	-----	-----
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Total Anions	----	0.01	meq/L		17.8	24.7	25.9	----	----
Total Cations	----	0.01	meq/L		16.0	20.8	24.4	----	----
Ionic Balance	----	0.01	%		5.60	8.55	2.86	----	----

QUALITY CONTROL REPORT

Work Order	: EP1601429	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: richelle.bunbury@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7619
Facsimile	: +61 08 6462 7936	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: ----	Date Samples Received	: 18-Feb-2016
C-O-C number	: ----	Date Analysis Commenced	: 19-Feb-2016
Sampler	: ----	Issue Date	: 25-Feb-2016
Site	: ----	No. of samples received	: 3
Quote number	: ----	No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Scott James	Laboratory Manager	Perth Inorganics, Malaga, WA
Shobhna Chandra	Metals Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 371357)									
EP1601419-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.14	6.16	0.325	0% - 20%
EP1601429-002	QC47	EA005-P: pH Value	----	0.01	pH Unit	8.07	8.10	0.371	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 371358)									
EP1601419-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1770	1770	0.109	0% - 20%
EP1601429-002	QC47	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2270	2150	5.25	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 373424)									
EP1601444-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5300	5230	1.41	0% - 20%
EP1601427-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	842	849	0.887	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 371359)									
EP1601419-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	154	154	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	154	154	0.00	0% - 20%
EP1601429-002	QC47	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	308	300	2.93	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	308	300	2.93	0% - 20%
ED038A: Acidity (QC Lot: 372196)									
EP1601429-001	QC46	ED038: Acidity as CaCO3	----	1	mg/L	9	9	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 371601)									
EP1601485-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	18	18	0.00	0% - 50%
EP1601429-001	QC46	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	13	13	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 371600)									
EP1601485-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	137	136	0.00	0% - 20%
EP1601429-001	QC46	ED045G: Chloride	16887-00-6	1	mg/L	480	484	0.768	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 370738)									
EP1601410-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	16	16	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	22	22	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	138	137	0.00	0% - 20%
EP1601448-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	46	47	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	66	66	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	34	34	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	159	158	0.00	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 372918)									
EP1601429-002	QC47	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1603882-003	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 373279)									
EP1601429-001	QC46	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0001	<0.0001	0.00	No Limit
ES1603757-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 373441)									
EP1601429-001	QC46	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	13	13	0.00	No Limit
EP1601486-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.0012	1.3	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	0.002	2	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 373442)									
EP1601429-001	QC46	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.9	0.9	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	5.2	5.3	0.00	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
EP1601486-001	Anonymous	EG094A-F: Aluminium	7429-90-5	5	µg/L	9	9	0.00	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.0022	2.2	0.00	0% - 50%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.0195	19.4	0.00	0% - 20%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	0.0012	1.2	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.0094	9.3	1.44	0% - 50%
EP1601486-001	Anonymous	EG094A-F: Zinc	7440-66-6	1	µg/L	0.024	23	0.00	0% - 20%
		EG094A-F: Aluminium	7429-90-5	5	µg/L	<0.005	<5	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 373455)									
EP1601429-001	QC46	EG094B-T: Selenium	7782-49-2	0.2	µg/L	13.8	13.9	0.00	0% - 20%
		EG094B-T: Iron	7439-89-6	2	µg/L	74700	74200	0.664	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 373456)									
EP1601429-001	QC46	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.09	0.09	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	35.5	36.0	1.54	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	51.8	52.9	2.15	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	40.4	39.6	1.90	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	7.2	7.4	1.94	0% - 50%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	16.9	16.7	1.24	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 373456) - continued									
EP1601429-001	QC46	EG094A-T: Nickel	7440-02-0	0.5	µg/L	52.2	53.6	2.61	0% - 20%
		EG094A-T: Zinc	7440-66-6	1	µg/L	10	11	0.00	0% - 50%
		EG094A-T: Aluminium	7429-90-5	5	µg/L	21400	20700	2.96	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 368261)									
EP1601429-001	QC46	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.28	0.27	4.86	0% - 20%
EP1601469-006	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 371599)									
EP1601485-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit
EP1601429-001	QC46	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 368262)									
EP1601429-001	QC46	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	<0.01	0.00	No Limit
EP1601469-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 373546)									
EP1601380-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.0	0.00	0% - 50%
EP1601419-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	43.2	38.4	11.9	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 373548)									
EP1601429-003	QC48	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.2	14.5	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 373547)									
EP1601380-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.01	0.00	No Limit
EP1601419-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.01	0.02	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 373549)									
EP1601429-003	QC48	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.11	48.2	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 371598)									
EP1601429-001	QC46	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.08	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 371357)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 371358)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	99.8	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 373424)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	83	111	
				<10	293 mg/L	117	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 371359)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	99.8	76	126	
				<1	200 mg/L	95.9	90	106	
ED038A: Acidity (QCLot: 372196)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	99.6	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 371601)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	96.4	89	113	
				<1	100 mg/L	94.8	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 371600)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	103	84	120	
				<1	1000 mg/L	99.7	84	110	
ED093F: Dissolved Major Cations (QCLot: 370738)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	94.3	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	94.0	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	97.0	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	94.3	87	111	
EG035F: Dissolved Mercury by FIMS (QCLot: 372918)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	86.4	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 373279)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.6	77	111	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 373441)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	100	79	115	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 373441) - continued									
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	110	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 373442)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	104	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	102	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	104	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.3	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	103	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	99.4	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 373455)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	111	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	99.3	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 373456)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	108	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	96.7	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	108	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	109	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	109	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	111	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	93.6	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 368261)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 371599)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 368262)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 373546)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	95.2	82	110	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 373548)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.2	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 373547)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	94.2	70	130	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 373549)									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 373549) - continued									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	86.9	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 371598)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	87	115	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 371601)							
EP1601429-003	QC48	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	102	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 371600)							
EP1601429-003	QC48	ED045G: Chloride	16887-00-6	1000 mg/L	98.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 372918)							
EP1601429-001	QC46	EG035F: Mercury	7439-97-6	0.01 mg/L	80.5	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 373279)							
ES1603610-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	88.1	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 373442)							
EP1601429-002	QC47	EG094A-F: Arsenic	7440-38-2	50 µg/L	114	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	116	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	121	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	114	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	114	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	120	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	120	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 373456)							
EP1601429-002	QC47	EG094A-T: Arsenic	7440-38-2	50 µg/L	# Not Determined	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	# Not Determined	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	109	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	# Not Determined	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 373456) - continued							
EP1601429-002	QC47	EG094A-T: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	# Not Determined	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 368261)							
EP1601429-001	QC46	EK055G: Ammonia as N	7664-41-7	1 mg/L	110	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 371599)							
EP1601429-003	QC48	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 368262)							
EP1601429-001	QC46	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	113	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 373546)							
EP1601399-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	103	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 373548)							
EP1601429-003	QC48	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	96.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 373547)							
EP1601399-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	103	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 373549)							
EP1601429-003	QC48	EK067G: Total Phosphorus as P	----	1 mg/L	77.2	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 371598)							
EP1601429-003	QC48	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	111	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1601429	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7619
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 18-Feb-2016
Site	: ----	Issue Date	: 25-Feb-2016
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Arsenic	7440-38-2	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Chromium	7440-47-3	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Lead	7439-92-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Nickel	7440-02-0	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1601429--002	QC47	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved	QC46, QC48	QC47,	----	----	----	22-Feb-2016	18-Feb-2016	4

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Container / Client Sample ID(s)							



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC46, QC48	QC47,	18-Feb-2016	----	----	----	22-Feb-2016	18-Feb-2016	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC46, QC48	QC47,	18-Feb-2016	----	----	----	22-Feb-2016	17-Mar-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC46, QC48	QC47,	18-Feb-2016	----	----	----	24-Feb-2016	25-Feb-2016	✓
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC46, QC48	QC47,	18-Feb-2016	----	----	----	22-Feb-2016	03-Mar-2016	✓
ED038A: Acidity								
Miscellaneous Plastic bottle -unpreserved (ED038) QC46, QC48	QC47,	18-Feb-2016	----	----	----	23-Feb-2016	03-Mar-2016	✓
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	17-Mar-2016	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	17-Mar-2016	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC46, QC48	QC47,	18-Feb-2016	----	----	----	22-Feb-2016	25-Feb-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC46, QC48	QC47,	18-Feb-2016	----	----	----	25-Feb-2016	17-Mar-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Miscellaneous Nitric preserved - unfiltered (EG035T) QC46, QC48	QC47,	18-Feb-2016	----	----	----	25-Feb-2016	17-Mar-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG094A-F) QC46, QC48	QC47,	18-Feb-2016	----	----	----	24-Feb-2016	16-Aug-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Miscellaneous Nitric preserved - unfiltered (EG094A-T) QC46, QC48	QC47,	18-Feb-2016	24-Feb-2016	16-Aug-2016	✓	24-Feb-2016	16-Aug-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG094B-F) QC46, QC48	QC47,	18-Feb-2016	----	----	----	24-Feb-2016	16-Aug-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Miscellaneous Nitric preserved - unfiltered (EG094B-T) QC46, QC48	QC47,	18-Feb-2016	24-Feb-2016	16-Aug-2016	✓	24-Feb-2016	16-Aug-2016	✓
EK055G: Ammonia as N by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK055G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	17-Mar-2016	✓
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	20-Feb-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK059G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	17-Mar-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK061G) QC46, QC48	QC47,	18-Feb-2016	24-Feb-2016	17-Mar-2016	✓	24-Feb-2016	17-Mar-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK067G) QC46, QC48	QC47,	18-Feb-2016	24-Feb-2016	17-Mar-2016	✓	24-Feb-2016	17-Mar-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC46, QC48	QC47,	18-Feb-2016	----	----	----	19-Feb-2016	20-Feb-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	21	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	21	9.52	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 16, 2016 8:48 AM**
Eurofins | mgt reference: **493005**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

AGAIN THE COC SAYS 'CA LOR TO LOWERED TO 0.00005MG/L', WHEN THE SYMBOL FOR CADMIUM IS CD. PLEASE FIX FOR FUTURE COC'S. TOTAL METALS BOTTLE PROVIDED FOR SAMPLE QC61, WHEN ONLY DISSOLVED METALS REQUESTED, SO WILL TEST FOR TOTAL METALS. PLEASE ADVISE IF YOU WANT OTHERWISE. ALSO, PLEASE SEND TWO BOTTLES OF BOTH DISSOLVED AND TOTAL METALS BOTTLES FOR EACH SAMPLE. CANNOT DO DISSOLVED METALS TESTING WITH A TOTAL METALS BOTTLE

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **493005-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Mar 16, 2016**

Client Sample ID			MW1	MW2	MW3	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14557	M16-Ma14558	M16-Ma14559	M16-Ma14560
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	12	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	0.23	4.3	0.08
Chloride	1	mg/L	76	32	15	12
Conductivity (at 25°C)	1	uS/cm	650	220	280	110
Nitrate & Nitrite (as N)	0.05	mg/L	15	< 0.05	< 0.05	0.15
Nitrate (as N)	0.02	mg/L	15	< 0.02	< 0.02	0.10
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	0.05
pH	0.1	pH Units	7.7	6.0	6.8	6.8
Phosphate total (as P)	0.05	mg/L	0.06	< 0.05	1.1	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.64	< 0.05
Sulphate (as S)	5	mg/L	11	9.1	5.7	< 5
Total Dissolved Solids	10	mg/L	430	^{Q19} 150	160	69
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	0.5	7.2	0.4
Total Nitrogen (as N)	0.2	mg/L	17	0.5	7.2	0.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	98	< 20	86	48
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	1.4	3.7	0.28	1.9
Aluminium (filtered)	0.05	mg/L	< 0.05	0.14	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.004	< 0.001	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	< 0.001	0.002
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.13	0.42	0.08	0.09
Iron (filtered)	0.05	mg/L	< 0.05	0.18	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	0.004	< 0.001	0.008
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.017	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.017	< 0.005	< 0.005

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-Ma14557	M16-Ma14558	M16-Ma14559	M16-Ma14560
Eurofins mgt Sample No.			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.003	0.009	0.006
Zinc (filtered)	0.001	mg/L	< 0.001	0.003	0.003	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	56	6.9	33	14
Magnesium	0.5	mg/L	6.3	6.9	3.3	1.6
Potassium	0.5	mg/L	36	1.1	1.8	< 0.5
Sodium	0.5	mg/L	30	15	9.2	4.9

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	SW1-1 Water
Sample Matrix			M16-Ma14561	M16-Ma14562	M16-Ma14563	M16-Ma14564
Eurofins mgt Sample No.			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	30	25	15	< 10
Ammonia (as N)	0.01	mg/L	0.85	0.61	0.07	0.03
Chloride	1	mg/L	37	19	15	98
Conductivity (at 25°C)	1	uS/cm	180	210	120	530
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.10	1.2	6.5
Nitrate (as N)	0.02	mg/L	0.06	0.10	1.2	6.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	5.1	5.6	4.4	7.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	15	9.1	19
Total Dissolved Solids	10	mg/L	^{Q19} 140	^{Q19} 140	84	300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	1.2	0.7	0.8
Total Nitrogen (as N)	0.2	mg/L	1.8	1.3	1.9	7.3
Turbidity	1	NTU	-	-	-	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	44
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	20	25	3.8	< 0.05
Aluminium (filtered)	0.05	mg/L	1.3	0.42	0.62	< 0.05
Arsenic	0.001	mg/L	0.002	0.003	0.005	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.015	0.019	0.007	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	SW1-1 Water
Sample Matrix			M16-Ma14561	M16-Ma14562	M16-Ma14563	M16-Ma14564
Eurofins mgt Sample No.			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	0.001	mg/L	0.007	0.006	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.59	1.7	2.0	0.39
Iron (filtered)	0.05	mg/L	0.20	0.12	0.29	0.14
Lead	0.001	mg/L	0.011	0.021	0.005	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.029
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.023
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.006	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.034	0.004	0.016
Zinc (filtered)	0.001	mg/L	0.004	0.014	0.002	0.012
Alkali Metals						
Calcium	0.5	mg/L	0.9	2.7	7.8	16
Magnesium	0.5	mg/L	5.0	7.0	2.3	13
Potassium	0.5	mg/L	0.8	3.4	2.1	5.3
Sodium	0.5	mg/L	22	18	9.1	65
Pathogens						
E.coli	1	MPN/100mL	-	-	-	33
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	>1600

Client Sample ID			SW2-1 Water	SW2-2 Water	SW2-3 Water	SW3-1 Water
Sample Matrix			M16-Ma14565	M16-Ma14566	M16-Ma14567	M16-Ma14568
Eurofins mgt Sample No.			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	0.02
Chloride	1	mg/L	69	70	72	70
Conductivity (at 25°C)	1	uS/cm	360	370	390	440
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
pH	0.1	pH Units	7.1	7.2	7.3	7.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	13	13	13	8.4
Total Dissolved Solids	10	mg/L	210	220	220	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.5	0.7
Total Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.5	0.7
Turbidity	1	NTU	1.8	1.8	1.7	3.2

Client Sample ID			SW2-1	SW2-2	SW2-3	SW3-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14565	M16-Ma14566	M16-Ma14567	M16-Ma14568
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	23	26	30	67
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	0.16	0.20	0.35	0.34
Aluminium (filtered)	0.05	mg/L	0.13	0.16	0.25	0.25
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.12	0.11	0.22
Iron (filtered)	0.05	mg/L	0.09	0.08	0.08	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.005	0.007	0.004
Zinc (filtered)	0.001	mg/L	0.004	0.004	0.004	0.004
Alkali Metals						
Calcium	0.5	mg/L	6.5	8.9	6.5	15
Magnesium	0.5	mg/L	8.2	8.2	6.0	8.2
Potassium	0.5	mg/L	2.3	2.3	2.3	2.3
Sodium	0.5	mg/L	46	47	55	53
Pathogens						
E.coli	1	MPN/100mL	<1	33	23	33
Thermotolerant Coliforms	1	MPN/100mL	140	220	46	49

Client Sample ID			SW3-2	SWL3-3	MW55	QC60
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14569	M16-Ma14570	M16-Ma14571	M16-Ma14572
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	0.11	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	0.1	-

Client Sample ID			SW3-2	SWL3-3	MW55	QC60
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14569	M16-Ma14570	M16-Ma14571	M16-Ma14572
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	-
Toluene	0.001	mg/L	-	-	< 0.001	-
Ethylbenzene	0.001	mg/L	-	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	-
o-Xylene	0.001	mg/L	-	-	< 0.001	-
Xylenes - Total	0.003	mg/L	-	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	-	54	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	-
Organochlorine Pesticides						
Chlordanes - Total	0.0001	mg/L	-	-	< 0.0001	-
4,4'-DDD	0.00001	mg/L	-	-	< 0.00002	-
4,4'-DDE	0.00001	mg/L	-	-	< 0.00002	-
4,4'-DDT	0.00001	mg/L	-	-	< 0.00001	-
a-BHC	0.00001	mg/L	-	-	< 0.00001	-
Aldrin	0.00001	mg/L	-	-	< 0.00001	-
b-BHC	0.00001	mg/L	-	-	< 0.00001	-
d-BHC	0.00001	mg/L	-	-	< 0.00001	-
Dieldrin	0.00001	mg/L	-	-	< 0.00001	-
Endosulfan I	0.00001	mg/L	-	-	< 0.00001	-
Endosulfan II	0.00001	mg/L	-	-	< 0.00001	-
Endosulfan sulphate	0.00001	mg/L	-	-	< 0.00001	-
Endrin	0.00001	mg/L	-	-	< 0.00001	-
Endrin aldehyde	0.00001	mg/L	-	-	< 0.00001	-
Endrin ketone	0.00001	mg/L	-	-	< 0.00001	-
g-BHC (Lindane)	0.00001	mg/L	-	-	< 0.00001	-
Heptachlor	0.00001	mg/L	-	-	< 0.00001	-
Heptachlor epoxide	0.00001	mg/L	-	-	< 0.00001	-
Hexachlorobenzene	0.00001	mg/L	-	-	< 0.00001	-
Methoxychlor	0.00001	mg/L	-	-	< 0.00001	-
Toxaphene	0.0001	mg/L	-	-	< 0.0001	-
Dibutylchloroendate (surr.)	1	%	-	-	88	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	94	-
Organophosphorous Pesticides						
Bolstar	0.0001	mg/L	-	-	< 0.0001	-
Chlorpyrifos	0.0001	mg/L	-	-	< 0.0001	-
Demeton-O	0.0001	mg/L	-	-	< 0.0001	-
Diazinon	0.0001	mg/L	-	-	< 0.0001	-
Dichlorvos	0.0001	mg/L	-	-	< 0.0001	-
Disulfoton	0.0001	mg/L	-	-	< 0.0001	-
Ethion	0.0001	mg/L	-	-	< 0.0001	-
Ethoprop	0.0001	mg/L	-	-	< 0.0001	-
Fenitrothion	0.0001	mg/L	-	-	< 0.0001	-
Fensulfothion	0.0001	mg/L	-	-	< 0.0001	-
Fenthion	0.0001	mg/L	-	-	< 0.0001	-
Merphos	0.0001	mg/L	-	-	< 0.0001	-

Client Sample ID			SW3-2	SWL3-3	MW55	QC60
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14569	M16-Ma14570	M16-Ma14571	M16-Ma14572
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Organophosphorous Pesticides						
Methyl azinphos	0.0001	mg/L	-	-	< 0.0001	-
Methyl parathion	0.0001	mg/L	-	-	< 0.0001	-
Mevinphos	0.0001	mg/L	-	-	< 0.0001	-
Naled	0.0001	mg/L	-	-	< 0.0001	-
Phorate	0.0001	mg/L	-	-	< 0.0001	-
Ronnel	0.0001	mg/L	-	-	< 0.0001	-
Tokuthion	0.0001	mg/L	-	-	< 0.0001	-
Trichloronate	0.0001	mg/L	-	-	< 0.0001	-
Triphenylphosphate (surr.)	1	%	-	-	57	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	-	-	< 0.03	-
1-Chloronaphthalene	0.005	mg/L	-	-	< 0.005	-
1-Naphthylamine	0.005	mg/L	-	-	< 0.005	-
1,2-Dichlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,2,3-Trichlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,2,4-Trichlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,3-Dichlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,3,5-Trichlorobenzene	0.005	mg/L	-	-	< 0.005	-
1,4-Dichlorobenzene	0.005	mg/L	-	-	< 0.005	-
2-Chloronaphthalene	0.005	mg/L	-	-	< 0.005	-
2-Chlorophenol	0.003	mg/L	-	-	< 0.003	-
2-Methylnaphthalene	0.005	mg/L	-	-	< 0.005	-
2-Methylphenol (o-Cresol)	0.003	mg/L	-	-	< 0.003	-
2-Naphthylamine	0.005	mg/L	-	-	< 0.005	-
2-Nitroaniline	0.005	mg/L	-	-	< 0.005	-
2-Nitrophenol	0.01	mg/L	-	-	< 0.01	-
2-Picoline	0.005	mg/L	-	-	< 0.005	-
2,3,4,6-Tetrachlorophenol	0.01	mg/L	-	-	< 0.01	-
2,4-Dichlorophenol	0.003	mg/L	-	-	< 0.003	-
2,4-Dimethylphenol	0.003	mg/L	-	-	< 0.003	-
2,4-Dinitrophenol	0.03	mg/L	-	-	< 0.03	-
2,4-Dinitrotoluene	0.005	mg/L	-	-	< 0.005	-
2,4,5-Trichlorophenol	0.01	mg/L	-	-	< 0.01	-
2,4,6-Trichlorophenol	0.01	mg/L	-	-	< 0.01	-
2,6-Dichlorophenol	0.003	mg/L	-	-	< 0.003	-
2,6-Dinitrotoluene	0.005	mg/L	-	-	< 0.005	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	-	-	< 0.006	-
3-Methylcholanthrene	0.005	mg/L	-	-	< 0.005	-
3,3'-Dichlorobenzidine	0.005	mg/L	-	-	< 0.005	-
4-Aminobiphenyl	0.005	mg/L	-	-	< 0.005	-
4-Bromophenyl phenyl ether	0.005	mg/L	-	-	< 0.005	-
4-Chloro-3-methylphenol	0.01	mg/L	-	-	< 0.01	-

Client Sample ID			SW3-2 Water M16-Ma14569 Mar 15, 2016	SWL3-3 Water M16-Ma14570 Mar 15, 2016	MW55 Water M16-Ma14571 Mar 15, 2016	QC60 Water M16-Ma14572 Mar 15, 2016
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Semivolatile Organics						
4-Chlorophenyl phenyl ether	0.005	mg/L	-	-	< 0.005	-
4-Nitrophenol	0.03	mg/L	-	-	< 0.03	-
4,4'-DDD	0.005	mg/L	-	-	< 0.005	-
4,4'-DDE	0.005	mg/L	-	-	< 0.005	-
4,4'-DDT	0.005	mg/L	-	-	< 0.005	-
7,12-Dimethylbenz(a)anthracene	0.005	mg/L	-	-	< 0.005	-
a-BHC	0.005	mg/L	-	-	< 0.005	-
Acenaphthene	0.001	mg/L	-	-	< 0.001	-
Acenaphthylene	0.001	mg/L	-	-	< 0.001	-
Acetophenone	0.005	mg/L	-	-	< 0.005	-
Aldrin	0.005	mg/L	-	-	< 0.005	-
Aniline	0.005	mg/L	-	-	< 0.005	-
Anthracene	0.001	mg/L	-	-	< 0.001	-
b-BHC	0.005	mg/L	-	-	< 0.005	-
Benz(a)anthracene	0.001	mg/L	-	-	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	-	-	< 0.001	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	-	-	< 0.001	-
Benzo(g,h,i)perylene	0.001	mg/L	-	-	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	-	-	< 0.001	-
Benzyl chloride	0.005	mg/L	-	-	< 0.005	-
Bis(2-chloroethoxy)methane	0.005	mg/L	-	-	< 0.005	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	-	-	< 0.005	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	-	-	< 0.005	-
Butyl benzyl phthalate	0.005	mg/L	-	-	< 0.005	-
Chrysene	0.001	mg/L	-	-	< 0.001	-
d-BHC	0.005	mg/L	-	-	< 0.005	-
Di-n-butyl phthalate	0.005	mg/L	-	-	< 0.005	-
Di-n-octyl phthalate	0.005	mg/L	-	-	< 0.005	-
Dibenz(a,h)anthracene	0.001	mg/L	-	-	< 0.001	-
Dibenz(a,j)acridine	0.005	mg/L	-	-	< 0.005	-
Dibenzofuran	0.005	mg/L	-	-	< 0.005	-
Dieldrin	0.005	mg/L	-	-	< 0.005	-
Diethyl phthalate	0.005	mg/L	-	-	< 0.005	-
Dimethyl phthalate	0.005	mg/L	-	-	< 0.005	-
Dimethylaminoazobenzene	0.005	mg/L	-	-	< 0.005	-
Diphenylamine	0.005	mg/L	-	-	< 0.005	-
Endosulfan I	0.005	mg/L	-	-	< 0.005	-
Endosulfan II	0.005	mg/L	-	-	< 0.005	-
Endosulfan sulphate	0.005	mg/L	-	-	< 0.005	-
Endrin	0.005	mg/L	-	-	< 0.005	-
Endrin aldehyde	0.005	mg/L	-	-	< 0.005	-
Endrin ketone	0.005	mg/L	-	-	< 0.005	-
Fluoranthene	0.001	mg/L	-	-	< 0.001	-
Fluorene	0.001	mg/L	-	-	< 0.001	-
g-BHC (Lindane)	0.005	mg/L	-	-	< 0.005	-
Heptachlor	0.005	mg/L	-	-	< 0.005	-
Heptachlor epoxide	0.005	mg/L	-	-	< 0.005	-
Hexachlorobenzene	0.005	mg/L	-	-	< 0.005	-
Hexachlorobutadiene	0.005	mg/L	-	-	< 0.005	-

Client Sample ID			SW3-2	SWL3-3	MW55	QC60
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14569	M16-Ma14570	M16-Ma14571	M16-Ma14572
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
Hexachlorocyclopentadiene	0.005	mg/L	-	-	< 0.005	-
Hexachloroethane	0.005	mg/L	-	-	< 0.005	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	-	< 0.001	-
Methoxychlor	0.005	mg/L	-	-	< 0.005	-
N-Nitrosodibutylamine	0.005	mg/L	-	-	< 0.005	-
N-Nitrosodipropylamine	0.005	mg/L	-	-	< 0.005	-
N-Nitrosopiperidine	0.005	mg/L	-	-	< 0.005	-
Naphthalene	0.001	mg/L	-	-	< 0.001	-
Nitrobenzene	0.05	mg/L	-	-	< 0.05	-
Pentachlorobenzene	0.005	mg/L	-	-	< 0.005	-
Pentachloronitrobenzene	0.005	mg/L	-	-	< 0.005	-
Pentachlorophenol	0.01	mg/L	-	-	< 0.01	-
Phenanthrene	0.001	mg/L	-	-	< 0.001	-
Phenol	0.003	mg/L	-	-	< 0.005	-
Pronamide	0.005	mg/L	-	-	< 0.005	-
Pyrene	0.001	mg/L	-	-	< 0.001	-
Trifluralin	0.005	mg/L	-	-	< 0.005	-
Phenol-d6 (surr.)	1	%	-	-	20	-
Nitrobenzene-d5 (surr.)	1	%	-	-	61	-
2-Fluorobiphenyl (surr.)	1	%	-	-	72	-
2.4.6-Tribromophenol (surr.)	1	%	-	-	63	-
Acidity (as CaCO3)						
	10	mg/L	< 10	< 10	< 10	-
Ammonia (as N)						
	0.01	mg/L	0.02	0.01	0.22	-
Chloride						
	1	mg/L	74	72	94	-
Conductivity (at 25°C)						
	1	uS/cm	440	440	940	-
Nitrate & Nitrite (as N)						
	0.05	mg/L	< 0.05	< 0.05	0.31	-
Nitrate (as N)						
	0.02	mg/L	< 0.02	< 0.02	0.28	-
Nitrite (as N)						
	0.02	mg/L	< 0.02	< 0.02	0.03	-
pH						
	0.1	pH Units	7.5	7.5	7.3	-
Phosphate total (as P)						
	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)						
	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)						
	5	mg/L	11	8.5	65	-
Total Dissolved Solids						
	10	mg/L	260	250	550	-
Total Kjeldahl Nitrogen (as N)						
	0.2	mg/L	0.6	0.6	0.8	-
Total Nitrogen (as N)						
	0.2	mg/L	0.6	0.6	1.1	-
Turbidity						
	1	NTU	3.3	5.0	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)						
	20	mg/L	69	67	100	-
Carbonate Alkalinity (as CaCO3)						
	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)						
	10	mg/L	< 10	< 10	< 10	-
Heavy Metals						
Aluminium						
	0.05	mg/L	0.37	0.35	0.33	-
Aluminium (filtered)						
	0.05	mg/L	0.28	0.29	0.18	< 0.05
Arsenic						
	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)						
	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium						
	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)						
	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium						
	0.001	mg/L	0.001	0.001	0.002	-

Client Sample ID			SW3-2	SWL3-3	MW55	QC60
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14569	M16-Ma14570	M16-Ma14571	M16-Ma14572
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.24	0.23	0.10	-
Iron (filtered)	0.05	mg/L	0.19	0.20	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.003	0.003	-
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	16	16	67	-
Magnesium	0.5	mg/L	8.9	9.0	11	-
Potassium	0.5	mg/L	2.3	2.3	13	-
Sodium	0.5	mg/L	57	47	78	-
Pathogens						
E.coli	1	MPN/100mL	11	23	-	-
Thermotolerant Coliforms	1	MPN/100mL	240	79	-	-

Client Sample ID			QC61	QC63	MW8
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14573	M16-Ma14574	M16-Ma14580
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	-	< 10	< 10
Ammonia (as N)	0.01	mg/L	-	< 0.01	0.01
Chloride	1	mg/L	-	71	16
Conductivity (at 25°C)	1	uS/cm	-	390	150
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	6.5
Nitrate (as N)	0.02	mg/L	-	< 0.02	6.5
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02
pH	0.1	pH Units	-	7.3	6.4
Phosphate total (as P)	0.05	mg/L	-	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	13	< 5
Total Dissolved Solids	10	mg/L	-	220	120
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	0.5	< 0.2
Total Nitrogen (as N)	0.2	mg/L	-	0.5	6.5
Turbidity	1	NTU	-	1.8	-

Client Sample ID			QC61	QC63	MW8
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ma14573	M16-Ma14574	M16-Ma14580
Date Sampled			Mar 15, 2016	Mar 15, 2016	Mar 15, 2016
Test/Reference	LOR	Unit			
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	33	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	0.21	5.0
Aluminium (filtered)	0.05	mg/L	-	0.21	0.17
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	-	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.007
Chromium (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.11	0.11
Iron (filtered)	0.05	mg/L	-	0.09	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.004
Lead (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	-	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	-	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	-	< 0.001	< 0.001
Zinc	0.001	mg/L	< 0.001	0.005	0.004
Zinc (filtered)	0.001	mg/L	-	0.004	0.001
Alkali Metals					
Calcium	0.5	mg/L	-	5.9	14
Magnesium	0.5	mg/L	-	7.5	2.0
Potassium	0.5	mg/L	-	2.3	< 0.5
Sodium	0.5	mg/L	-	46	12
Pathogens					
E.coli	1	MPN/100mL	-	7	-
Thermotolerant Coliforms	1	MPN/100mL	-	79	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Mar 18, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Mar 16, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Mar 16, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Mar 18, 2016	7 Day
Organochlorine Pesticides - Method: USEPA 8081 Organochlorine Pesticides	Melbourne	Mar 18, 2016	7 Day
Organophosphorous Pesticides - Method: USEPA 8270 Organophosphorus Pesticides	Melbourne	Mar 18, 2016	7 Day
Semivolatile Organics - Method: USEPA 8270 Semivolatile Organics	Melbourne	Mar 18, 2016	7 Day
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 16, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 16, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 18, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 16, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 16, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 16, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 16, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 16, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Mar 18, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 18, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 16, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 17, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 16, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 16, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 16, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 16, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 16, 2016	180 Day
E.coli	Melbourne	Mar 16, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
- Method: LTM-MIC-6621 Thermotolerant Coliforms	Melbourne	Mar 16, 2016	24 Hour
- Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN Total Nitrogen Set (as N) Nitrate & Nitrite (as N)	Melbourne	Mar 16, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA Total Kjeldahl Nitrogen (as N)	Melbourne	Mar 16, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDD	mg/L	< 0.00001			0.00001	Pass	
4.4'-DDE	mg/L	< 0.00001			0.00001	Pass	
4.4'-DDT	mg/L	< 0.00001			0.00001	Pass	
a-BHC	mg/L	< 0.00001			0.00001	Pass	
Aldrin	mg/L	< 0.00001			0.00001	Pass	
b-BHC	mg/L	< 0.00001			0.00001	Pass	
d-BHC	mg/L	< 0.00001			0.00001	Pass	
Dieldrin	mg/L	< 0.00001			0.00001	Pass	
Endosulfan I	mg/L	< 0.00001			0.00001	Pass	
Endosulfan II	mg/L	< 0.00001			0.00001	Pass	
Endosulfan sulphate	mg/L	< 0.00001			0.00001	Pass	
Endrin	mg/L	< 0.00001			0.00001	Pass	
Endrin aldehyde	mg/L	< 0.00001			0.00001	Pass	
Endrin ketone	mg/L	< 0.00001			0.00001	Pass	
g-BHC (Lindane)	mg/L	< 0.00001			0.00001	Pass	
Heptachlor	mg/L	< 0.00001			0.00001	Pass	
Heptachlor epoxide	mg/L	< 0.00001			0.00001	Pass	
Hexachlorobenzene	mg/L	< 0.00001			0.00001	Pass	
Methoxychlor	mg/L	< 0.00001			0.00001	Pass	
Toxaphene	mg/L	< 0.0001			0.0001	Pass	
Method Blank							
Organophosphorous Pesticides							
Bolstar	mg/L	< 0.0001			0.0001	Pass	
Chlorpyrifos	mg/L	< 0.0001			0.0001	Pass	
Demeton-O	mg/L	< 0.0001			0.0001	Pass	
Diazinon	mg/L	< 0.0001			0.0001	Pass	
Dichlorvos	mg/L	< 0.0001			0.0001	Pass	
Disulfoton	mg/L	< 0.0001			0.0001	Pass	
Ethion	mg/L	< 0.0001			0.0001	Pass	
Ethoprop	mg/L	< 0.0001			0.0001	Pass	
Fenitrothion	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fensulfothion	mg/L	< 0.0001			0.0001	Pass	
Fenthion	mg/L	< 0.0001			0.0001	Pass	
Merphos	mg/L	< 0.0001			0.0001	Pass	
Methyl azinphos	mg/L	< 0.0001			0.0001	Pass	
Methyl parathion	mg/L	< 0.0001			0.0001	Pass	
Mevinphos	mg/L	< 0.0001			0.0001	Pass	
Naled	mg/L	< 0.0001			0.0001	Pass	
Phorate	mg/L	< 0.0001			0.0001	Pass	
Ronnel	mg/L	< 0.0001			0.0001	Pass	
Tokuthion	mg/L	< 0.0001			0.0001	Pass	
Trichloronate	mg/L	< 0.0001			0.0001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3,5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2,3,4,6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2,4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2,4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3,3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
4-Nitrophenol	mg/L	< 0.03	0.03	Pass	
4.4'-DDD	mg/L	< 0.005	0.005	Pass	
4.4'-DDE	mg/L	< 0.005	0.005	Pass	
4.4'-DDT	mg/L	< 0.005	0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005	0.005	Pass	
a-BHC	mg/L	< 0.005	0.005	Pass	
Acenaphthene	mg/L	< 0.001	0.001	Pass	
Acenaphthylene	mg/L	< 0.001	0.001	Pass	
Acetophenone	mg/L	< 0.005	0.005	Pass	
Aldrin	mg/L	< 0.005	0.005	Pass	
Aniline	mg/L	< 0.005	0.005	Pass	
Anthracene	mg/L	< 0.001	0.001	Pass	
b-BHC	mg/L	< 0.005	0.005	Pass	
Benz(a)anthracene	mg/L	< 0.001	0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001	0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001	0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001	0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001	0.001	Pass	
Benzyl chloride	mg/L	< 0.005	0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005	0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005	0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005	0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005	0.005	Pass	
Chrysene	mg/L	< 0.001	0.001	Pass	
d-BHC	mg/L	< 0.005	0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005	0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005	0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001	0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005	0.005	Pass	
Dibenzofuran	mg/L	< 0.005	0.005	Pass	
Dieldrin	mg/L	< 0.005	0.005	Pass	
Diethyl phthalate	mg/L	< 0.005	0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005	0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005	0.005	Pass	
Diphenylamine	mg/L	< 0.005	0.005	Pass	
Endosulfan I	mg/L	< 0.005	0.005	Pass	
Endosulfan II	mg/L	< 0.005	0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005	0.005	Pass	
Endrin	mg/L	< 0.005	0.005	Pass	
Endrin aldehyde	mg/L	< 0.005	0.005	Pass	
Endrin ketone	mg/L	< 0.005	0.005	Pass	
Fluoranthene	mg/L	< 0.001	0.001	Pass	
Fluorene	mg/L	< 0.001	0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005	0.005	Pass	
Heptachlor	mg/L	< 0.005	0.005	Pass	
Heptachlor epoxide	mg/L	< 0.005	0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005	0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005	0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005	0.005	Pass	
Hexachloroethane	mg/L	< 0.005	0.005	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001	0.001	Pass	
Methoxychlor	mg/L	< 0.005	0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005	0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005	0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	75		70-130	Pass	
TRH C10-C14	%	88		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	77		70-130	Pass	
Toluene	%	77		70-130	Pass	
Ethylbenzene	%	80		70-130	Pass	
m&p-Xylenes	%	78		70-130	Pass	
Xylenes - Total	%	79		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	93		70-130	Pass	
TRH C6-C10	%	75		70-130	Pass	
LCS - % Recovery						
Organochlorine Pesticides						
4,4'-DDD	%	86		70-130	Pass	
4,4'-DDE	%	84		70-130	Pass	
4,4'-DDT	%	70		70-130	Pass	
a-BHC	%	72		70-130	Pass	
Aldrin	%	70		70-130	Pass	
b-BHC	%	92		70-130	Pass	
d-BHC	%	70		70-130	Pass	
Dieldrin	%	100		70-130	Pass	
Endosulfan I	%	80		70-130	Pass	
Endosulfan II	%	80		70-130	Pass	
Endosulfan sulphate	%	71		70-130	Pass	
Endrin	%	96		70-130	Pass	
Endrin aldehyde	%	76		70-130	Pass	
Endrin ketone	%	127		70-130	Pass	
g-BHC (Lindane)	%	85		70-130	Pass	
Heptachlor	%	71		70-130	Pass	
Heptachlor epoxide	%	70		70-130	Pass	
Hexachlorobenzene	%	127		70-130	Pass	
Methoxychlor	%	72		70-130	Pass	
LCS - % Recovery						
Organophosphorous Pesticides						
Diazinon	%	113		70-130	Pass	
Ethion	%	106		70-130	Pass	
Fenitrothion	%	107		70-130	Pass	
Methyl parathion	%	70		70-130	Pass	
Mevinphos	%	105		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	%	89		70-130	Pass	
LCS - % Recovery						
Semivolatile Organics						

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
1.2.4-Trichlorobenzene	%	78		70-130	Pass	
1.4-Dichlorobenzene	%	107		70-130	Pass	
2-Chlorophenol	%	72		30-130	Pass	
4-Chloro-3-methylphenol	%	43		30-130	Pass	
Acenaphthene	%	83		70-130	Pass	
N-Nitrosodipropylamine	%	89		70-130	Pass	
Phenol	%	31		30-130	Pass	
Pyrene	%	93		70-130	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	99		70-130	Pass	
Ammonia (as N)	%	99		70-130	Pass	
Chloride	%	109		70-130	Pass	
Nitrate & Nitrite (as N)	%	94		70-130	Pass	
Nitrate (as N)	%	94		70-130	Pass	
Nitrite (as N)	%	106		70-130	Pass	
Phosphate total (as P)	%	97		70-130	Pass	
Sulphate (as S)	%	112		70-130	Pass	
Total Dissolved Solids	%	88		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	113		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	98		80-120	Pass	
Aluminium (filtered)	%	98		80-120	Pass	
Arsenic	%	87		80-120	Pass	
Arsenic (filtered)	%	89		80-120	Pass	
Cadmium	%	96		70-130	Pass	
Cadmium (filtered)	%	96		70-130	Pass	
Chromium	%	103		80-120	Pass	
Chromium (filtered)	%	103		80-120	Pass	
Copper	%	100		80-120	Pass	
Copper (filtered)	%	100		80-120	Pass	
Iron	%	98		80-120	Pass	
Iron (filtered)	%	98		80-120	Pass	
Lead	%	108		80-120	Pass	
Lead (filtered)	%	108		80-120	Pass	
Manganese	%	100		80-120	Pass	
Manganese (filtered)	%	100		80-120	Pass	
Mercury	%	84		75-125	Pass	
Mercury (filtered)	%	86		70-130	Pass	
Nickel	%	105		80-120	Pass	
Nickel (filtered)	%	105		80-120	Pass	
Selenium	%	89		80-120	Pass	
Selenium (filtered)	%	92		80-120	Pass	
Zinc	%	85		80-120	Pass	
Zinc (filtered)	%	91		80-120	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	96		70-130	Pass	
Magnesium	%	105		70-130	Pass	
Potassium	%	87		70-130	Pass	
Sodium	%	91		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Ma14086	NCP	%	96		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Ma14086	NCP	%	84		70-130	Pass	
Nitrate (as N)	M16-Ma14086	NCP	%	83		70-130	Pass	
Nitrite (as N)	M16-Ma14086	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Ma14669	NCP	%	88		75-125	Pass	
Arsenic (filtered)	M16-Ma14668	NCP	%	85		70-130	Pass	
Cadmium	S16-Ma17387	NCP	%	84		70-130	Pass	
Cadmium (filtered)	S16-Ma15145	NCP	%	90		70-130	Pass	
Chromium	M16-Ma14669	NCP	%	90		75-125	Pass	
Chromium (filtered)	M16-Ma14668	NCP	%	90		70-130	Pass	
Copper	M16-Ma14669	NCP	%	86		75-125	Pass	
Copper (filtered)	M16-Ma14668	NCP	%	82		70-130	Pass	
Iron	B16-Ma12570	NCP	%	86		75-125	Pass	
Iron (filtered)	B16-Ma12575	NCP	%	85		70-130	Pass	
Lead	M16-Ma14669	NCP	%	100		75-125	Pass	
Lead (filtered)	M16-Ma14668	NCP	%	105		70-130	Pass	
Manganese	B16-Ma12583	NCP	%	93		75-125	Pass	
Manganese (filtered)	B16-Ma12575	NCP	%	90		70-130	Pass	
Mercury	M16-Ma14669	NCP	%	95		70-130	Pass	
Mercury (filtered)	M16-Ma14668	NCP	%	101		70-130	Pass	
Nickel	M16-Ma14669	NCP	%	83		75-125	Pass	
Nickel (filtered)	M16-Ma14668	NCP	%	83		70-130	Pass	
Selenium	B16-Ma12583	NCP	%	98		75-125	Pass	
Selenium (filtered)	B16-Ma12575	NCP	%	94		70-130	Pass	
Zinc	M16-Ma14669	NCP	%	88		75-125	Pass	
Zinc (filtered)	M16-Ma14668	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Ma14557	CP	%	95		70-130	Pass	
Magnesium	M16-Ma14557	CP	%	93		70-130	Pass	
Potassium	M16-Ma14557	CP	%	86		70-130	Pass	
Sodium	M16-Ma14557	CP	%	90		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Ma14558	CP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Ma14567	CP	%	99		70-130	Pass	
Sulphate (as S)	M16-Ma14567	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ma14568	CP	%	101		70-130	Pass	
Phosphorus reactive (as P)	M16-Ma14568	CP	%	91		70-130	Pass	
Sulphate (as S)	M16-Ma14568	CP	%	109		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Ma14568	CP	%	91		70-130	Pass	
Magnesium	M16-Ma14568	CP	%	93		70-130	Pass	
Potassium	M16-Ma14568	CP	%	82		70-130	Pass	
Sodium	M16-Ma14568	CP	%	91		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ma14569	CP	%	89		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma14569	CP	%	85		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	B16-Ma14675	NCP	%	92		70-130	Pass	
TRH C10-C14	B16-Ma14730	NCP	%	77		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	B16-Ma14675	NCP	%	88		70-130	Pass	
Toluene	B16-Ma14675	NCP	%	86		70-130	Pass	
Ethylbenzene	B16-Ma14675	NCP	%	83		70-130	Pass	
m&p-Xylenes	B16-Ma14675	NCP	%	84		70-130	Pass	
o-Xylene	B16-Ma14675	NCP	%	86		70-130	Pass	
Xylenes - Total	B16-Ma14675	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	B16-Ma14675	NCP	%	82		70-130	Pass	
TRH C6-C10	B16-Ma14675	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4,4'-DDD	M16-Ma14512	NCP	%	97		70-130	Pass	
4,4'-DDE	M16-Ma14512	NCP	%	92		70-130	Pass	
a-BHC	M16-Ma14512	NCP	%	129		70-130	Pass	
Aldrin	M16-Ma14512	NCP	%	88		70-130	Pass	
b-BHC	M16-Ma01692	NCP	%	118		70-130	Pass	
d-BHC	M16-Ma14512	NCP	%	70		70-130	Pass	
Dieldrin	M16-Ma14512	NCP	%	110		70-130	Pass	
Endosulfan I	M16-Ma14512	NCP	%	87		70-130	Pass	
Endosulfan II	M16-Ma14512	NCP	%	87		70-130	Pass	
Endosulfan sulphate	M16-Ma14512	NCP	%	73		70-130	Pass	
Endrin	M16-Ma06423	NCP	%	82		70-130	Pass	
Endrin aldehyde	M16-Ma14512	NCP	%	81		70-130	Pass	
Endrin ketone	M16-Ma01692	NCP	%	129		70-130	Pass	
g-BHC (Lindane)	M16-Ma06423	NCP	%	94		70-130	Pass	
Heptachlor	M16-Ma06423	NCP	%	76		70-130	Pass	
Heptachlor epoxide	M16-Ma14512	NCP	%	75		70-130	Pass	
Hexachlorobenzene	M16-Ma01692	NCP	%	116		70-130	Pass	
Methoxychlor	M16-Ma06423	NCP	%	72		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	B16-Ma14730	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Semivolatile Organics				Result 1				
1,2,4-Trichlorobenzene	M16-Ma12667	NCP	%	98		70-130	Pass	
1,4-Dichlorobenzene	M16-Ma16430	NCP	%	113		70-130	Pass	
2-Chlorophenol	M16-Ma16430	NCP	%	105		30-130	Pass	
2,4-Dinitrotoluene	M16-Ma16430	NCP	%	77		70-130	Pass	
4-Chloro-3-methylphenol	M16-Ma16430	NCP	%	113		30-130	Pass	
4-Nitrophenol	M16-Ma12667	NCP	%	52		30-130	Pass	
Acenaphthene	M16-Ma16430	NCP	%	119		70-130	Pass	
N-Nitrosodipropylamine	M16-Ma16430	NCP	%	86		70-130	Pass	
Phenol	M16-Ma16430	NCP	%	75		30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	M16-Ma16430	NCP	%	123			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ma14571	CP	%	105			70-130	Pass	
Phosphorus reactive (as P)	M16-Ma14571	CP	%	101			70-130	Pass	
Sulphate (as S)	M16-Ma14571	CP	%	72			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Ma14086	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Ma14086	NCP	mg/L	3.1	3.1	<1	30%	Pass	
Nitrate (as N)	M16-Ma14086	NCP	mg/L	3.0	3.0	<1	30%	Pass	
Nitrite (as N)	M16-Ma14086	NCP	mg/L	0.08	0.08	5.0	30%	Pass	
pH	M16-Ma14557	CP	pH Units	7.7	7.6	pass	30%	Pass	
Total Dissolved Solids	M16-Ma14556	NCP	mg/L	34000	35000	1.0	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma14557	CP	mg/L	98	100	5.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ma14557	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma14557	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Ma14557	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-Ma14669	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Ma14668	NCP	mg/L	0.008	0.008	3.0	30%	Pass	
Cadmium	S16-Ma17386	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium (filtered)	S16-Ma15144	NCP	mg/L	0.0005	0.0004	2.0	30%	Pass	
Chromium	M16-Ma14669	NCP	mg/L	0.007	0.007	<1	30%	Pass	
Chromium (filtered)	M16-Ma14668	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Copper	M16-Ma14669	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Ma14668	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Ma14669	NCP	mg/L	0.12	0.11	5.0	30%	Pass	
Iron (filtered)	B16-Ma12575	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Ma14669	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Ma14668	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	B16-Ma12570	NCP	mg/L	0.027	0.027	3.0	30%	Pass	
Manganese (filtered)	B16-Ma12575	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Ma14669	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ma14668	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Ma14669	NCP	mg/L	0.007	0.007	<1	30%	Pass	
Nickel (filtered)	M16-Ma14668	NCP	mg/L	0.004	0.004	4.0	30%	Pass	
Selenium	B16-Ma12570	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ma14668	NCP	mg/L	0.004	0.005	20	30%	Pass	
Zinc	M16-Ma14669	NCP	mg/L	0.004	0.006	31	30%	Fail	Q15
Zinc (filtered)	M16-Ma14668	NCP	mg/L	0.002	0.002	9.0	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M16-Ma14557	CP	mg/L	56	54	3.0	30%	Pass	
Magnesium	M16-Ma14557	CP	mg/L	6.3	6.2	2.0	30%	Pass	
Potassium	M16-Ma14557	CP	mg/L	36	34	7.0	30%	Pass	
Sodium	M16-Ma14557	CP	mg/L	30	29	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Ma14559	CP	mg/L	< 10	14	40	30%	Fail	Q15

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ma14566	CP	mg/L	0.20	0.22	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
pH	M16-Ma14567	CP	pH Units	7.3	7.2	pass	30%	Pass
Phosphorus reactive (as P)	M16-Ma14567	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma14567	CP	mg/L	13	15	10	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma14567	CP	mg/L	30	25	19	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ma14567	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma14567	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ma14567	CP	mg/L	0.25	0.32	21	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ma14568	CP	mg/L	70	71	2.5	30%	Pass
Phosphorus reactive (as P)	M16-Ma14568	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma14568	CP	mg/L	8.4	9.5	11	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma14568	CP	mg/L	15	16	8.0	30%	Pass
Magnesium	M16-Ma14568	CP	mg/L	8.2	9.1	10	30%	Pass
Potassium	M16-Ma14568	CP	mg/L	2.3	2.3	1.0	30%	Pass
Sodium	M16-Ma14568	CP	mg/L	53	47	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ma14569	CP	mg/L	< 10	< 10	<1	30%	Pass
Phosphate total (as P)	M16-Ma14569	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Ma14569	CP	mg/L	0.6	0.7	6.7	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M16-Ma11566	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C10-C14	B16-Ma14729	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	B16-Ma14729	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	B16-Ma14729	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M16-Ma11566	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M16-Ma11566	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M16-Ma11566	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M16-Ma11566	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M16-Ma11566	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M16-Ma11566	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-Ma11566	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-Ma11566	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M16-Ma12310	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4,4'-DDD	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDE	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDT	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
a-BHC	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Aldrin	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
b-BHC	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
d-BHC	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Dieldrin	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan I	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan II	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan sulphate	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin aldehyde	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin ketone	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
g-BHC (Lindane)	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor epoxide	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Hexachlorobenzene	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Methoxychlor	M16-Ma12310	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Toxaphene	B16-Ma02973	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	B16-Ma14729	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	B16-Ma14729	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	B16-Ma14729	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2-Methyl-4,6-dinitrophenol	M16-Ma16429	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
1-Chloronaphthalene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1-Naphthylamine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2-Dichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3-Trichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4-Trichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3-Dichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3,5-Trichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,4-Dichlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chloronaphthalene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chlorophenol	M16-Ma16429	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Methylnaphthalene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Methylphenol (o-Cresol)	M16-Ma16429	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Naphthylamine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitroaniline	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitrophenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Picoline	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,3,4,6-Tetrachlorophenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dichlorophenol	M16-Ma16429	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dimethylphenol	M16-Ma16429	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dinitrophenol	M16-Ma16429	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2,4-Dinitrotoluene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,4,5-Trichlorophenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4,6-Trichlorophenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,6-Dichlorophenol	M16-Ma16429	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,6-Dinitrotoluene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M16-Ma16429	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass

Duplicate									
Semivolatile Organics					Result 1	Result 2	RPD		
3-Methylcholanthrene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
3,3'-Dichlorobenzidine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4-Aminobiphenyl	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4-Bromophenyl phenyl ether	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4-Chloro-3-methylphenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
4-Chlorophenyl phenyl ether	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4-Nitrophenol	M16-Ma16429	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
4,4'-DDD	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4,4'-DDE	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4,4'-DDT	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
7,12-Dimethylbenz(a)anthracene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
a-BHC	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Acenaphthene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acetophenone	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Aldrin	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Aniline	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Anthracene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
b-BHC	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Benz(a)anthracene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g,h,i)perylene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzyl chloride	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Bis(2-chloroethoxy)methane	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Bis(2-chloroisopropyl)ether	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Bis(2-ethylhexyl)phthalate	M16-Ma16429	NCP	mg/L	0.010	0.007	34	30%	Fail	
Butyl benzyl phthalate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Chrysene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
d-BHC	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Di-n-butyl phthalate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Di-n-octyl phthalate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dibenz(a,h)anthracene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a,j)acridine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dibenzofuran	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dieldrin	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Diethyl phthalate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dimethyl phthalate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Dimethylaminoazobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Diphenylamine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endosulfan I	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endosulfan II	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endosulfan sulphate	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endrin	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endrin aldehyde	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Endrin ketone	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Fluoranthene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
g-BHC (Lindane)	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Heptachlor	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Heptachlor epoxide	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Hexachlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Hexachlorobutadiene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Q15

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
Hexachlorocyclopentadiene	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachloroethane	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Indeno(1.2.3-cd)pyrene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Methoxychlor	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodibutylamine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodipropylamine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosopiperidine	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Naphthalene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nitrobenzene	M16-Ma16429	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Pentachlorobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachloronitrobenzene	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachlorophenol	M16-Ma16429	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Phenanthrene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenol	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pronamide	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pyrene	M16-Ma16429	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trifluralin	M16-Ma16429	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ma14571	CP	mg/L	94	97	3.0	30%	Pass
Phosphorus reactive (as P)	M16-Ma14571	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma14571	CP	mg/L	65	65	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 17, 2016 8:56 AM**
Eurofins | mgt reference: **493206**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **493206-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Mar 17, 2016**

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Ma15746	M16-Ma15747	M16-Ma15748	M16-Ma15749
Eurofins mgt Sample No.			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	22	16	24
Chloride	1	mg/L	310	2100	13000	690
Conductivity (at 25°C)	1	uS/cm	1200	6300	38000	2200
pH	0.1	pH Units	7.7	5.8	7.8	6.2
Phosphate total (as P)	0.05	mg/L	0.34	0.20	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.6	71	420	38
Total Dissolved Solids	10	mg/L	740	3700	24000	1300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	100	< 20	180	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.10	0.02	0.17
Nitrate (as N)	0.02	mg/L	0.05	< 0.02	45	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.8	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.8	0.4
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	46	0.4
Heavy Metals						
Aluminium	0.05	mg/L	4.0	19	1.4	3.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.012	0.008	0.013	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.010	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00014	0.00058	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00007	0.00046	< 0.00005
Chromium	0.001	mg/L	0.009	0.013	0.002	0.008
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	0.006	0.002	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	58	15	1.3	6.6
Iron (filtered)	0.05	mg/L	< 0.05	1.3	< 0.05	2.1
Lead	0.001	mg/L	0.025	0.040	0.005	0.007
Lead (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	0.061	0.049	0.029	0.018

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Ma15746	M16-Ma15747	M16-Ma15748	M16-Ma15749
Eurofins mgt Sample No.			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.032	0.044	0.026	0.017
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.032	0.027	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.004	0.022	0.002
Selenium	0.001	mg/L	0.002	0.004	0.017	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.016	< 0.001
Zinc	0.001	mg/L	0.018	0.008	0.006	0.008
Zinc (filtered)	0.001	mg/L	0.008	0.005	0.006	0.008
Alkali Metals						
Calcium	0.5	mg/L	54	41	170	10
Magnesium	0.5	mg/L	21	180	760	48
Potassium	0.5	mg/L	6.8	16	130	8.0
Sodium	0.5	mg/L	130	970	6600	370

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW44 Water
Sample Matrix			M16-Ma15750	M16-Ma15751	M16-Ma15752	M16-Ma15753
Eurofins mgt Sample No.			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	17	23	17	< 10
Chloride	1	mg/L	2900	1700	880	380
Conductivity (at 25°C)	1	uS/cm	7900	5100	2900	1500
pH	0.1	pH Units	6.4	5.7	4.6	7.8
Phosphate total (as P)	0.05	mg/L	0.14	< 0.05	< 0.05	0.14
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	58	84	45	< 5
Total Dissolved Solids	10	mg/L	4600	3300	1800	960
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	25	< 20	< 20	210
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.20	0.03	0.04	0.19
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	0.05	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	1.0
Total Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	1.0
Heavy Metals						
Aluminium	0.05	mg/L	4.1	3.0	3.8	160
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.14	0.06
Arsenic	0.001	mg/L	0.003	0.002	0.002	0.067
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Cadmium	0.00005	mg/L	0.00009	0.00013	0.0013	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00008	0.00011	0.0013	< 0.00005
Chromium	0.001	mg/L	0.014	0.007	0.004	0.22

Client Sample ID			MW50	MW49	MW48	MW44
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma15750	M16-Ma15751	M16-Ma15752	M16-Ma15753
Date Sampled			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Copper	0.001	mg/L	0.005	0.018	0.002	0.033
Copper (filtered)	0.001	mg/L	< 0.001	0.013	< 0.001	0.001
Iron	0.05	mg/L	3.2	8.1	1.8	110
Iron (filtered)	0.05	mg/L	0.87	1.7	0.36	0.28
Lead	0.001	mg/L	0.030	0.059	0.026	0.29
Lead (filtered)	0.001	mg/L	0.001	0.033	0.013	0.002
Manganese	0.005	mg/L	0.020	0.11	0.026	0.050
Manganese (filtered)	0.005	mg/L	0.019	0.10	0.026	0.011
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	0.0010
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.021	0.016	0.061
Nickel (filtered)	0.001	mg/L	0.002	0.019	0.016	0.002
Selenium	0.001	mg/L	0.002	0.001	< 0.001	0.089
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.006
Zinc	0.001	mg/L	0.013	0.066	0.016	0.053
Zinc (filtered)	0.001	mg/L	0.010	0.045	0.016	0.002
Alkali Metals						
Calcium	0.5	mg/L	29	29	13	38
Magnesium	0.5	mg/L	180	150	65	39
Potassium	0.5	mg/L	36	15	9.5	4.6
Sodium	0.5	mg/L	1300	740	470	250

Client Sample ID			MW42	SWL19-1	SWL19-2	SWL19-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma15754	M16-Ma15755	M16-Ma15756	M16-Ma15757
Date Sampled			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	23	< 10	< 10	< 10
Chloride	1	mg/L	48	1400	1400	1300
Conductivity (at 25°C)	1	uS/cm	200	4100	4100	4000
pH	0.1	pH Units	4.3	7.4	7.6	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	0.07	< 0.05	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	29	29	26
Total Dissolved Solids	10	mg/L	^{Q19} 180	2800	2800	2700
Turbidity	1	NTU	-	330	14	41
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	56	59	66
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.25	0.03	< 0.01	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	0.8	0.7	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.8	0.7	0.9
Total Nitrogen (as N)	0.2	mg/L	1.2	0.8	0.7	0.69

Client Sample ID			MW42 Water	SWL19-1 Water	SWL19-2 Water	SWL19-3 Water
Sample Matrix			M16-Ma15754	M16-Ma15755	M16-Ma15756	M16-Ma15757
Eurofins mgt Sample No.			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.60	0.15	0.13	0.14
Aluminium (filtered)	0.05	mg/L	0.36	0.09	0.09	0.08
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.18	1.8	1.7	2.4
Iron (filtered)	0.05	mg/L	0.16	0.41	0.39	0.59
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.13	0.16	0.20
Manganese (filtered)	0.005	mg/L	< 0.005	0.11	0.14	0.18
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.004	0.004	0.005
Zinc (filtered)	0.001	mg/L	0.007	0.004	0.004	0.005
Alkali Metals						
Calcium	0.5	mg/L	1.4	13	12	11
Magnesium	0.5	mg/L	4.3	82	81	76
Potassium	0.5	mg/L	0.9	19	20	20
Sodium	0.5	mg/L	27	650	630	660
Pathogens						
E.coli	1	MPN/100mL	-	68	78	1300
Thermotolerant Coliforms	1	MPN/100mL	-	2200	330	2400

Client Sample ID			MW43 Water	SWL20-1 Water	SWL20-2 Water	SWL20-3 Water
Sample Matrix			M16-Ma15758	M16-Ma15759	M16-Ma15760	M16-Ma15761
Eurofins mgt Sample No.			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	27	< 10	< 10	< 10
Chloride	1	mg/L	1200	3700	3800	3600
Conductivity (at 25°C)	1	uS/cm	3800	11000	11000	11000
pH	0.1	pH Units	7.0	7.4	7.5	7.5
Phosphate total (as P)	0.05	mg/L	0.12	0.09	0.11	0.12
Phosphorus reactive (as P)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	12	230	230	230
Total Dissolved Solids	10	mg/L	^{Q19} 3700	7300	^{Q19} 8100	^{Q19} 8800
Turbidity	1	NTU	-	16	14	16

Client Sample ID			MW43	SWL20-1	SWL20-2	SWL20-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma15758	M16-Ma15759	M16-Ma15760	M16-Ma15761
Date Sampled			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	140	37	37	35
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.1	0.06	0.13	0.08
Nitrate (as N)	0.02	mg/L	< 0.2	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.2	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.2	1.8	2.4	2.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.3	1.9	2.5	2.6
Total Nitrogen (as N)	0.2	mg/L	4.3	1.9	2.5	2.6
Heavy Metals						
Aluminium	0.05	mg/L	6.5	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	1.1	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.019	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.85	1.1	1.1	1.2
Iron (filtered)	0.05	mg/L	0.09	0.86	0.88	0.83
Lead	0.001	mg/L	0.009	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.13	0.13	0.14
Manganese (filtered)	0.005	mg/L	0.007	0.12	0.12	0.12
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.005	0.005	0.005
Nickel (filtered)	0.001	mg/L	0.002	0.004	0.004	0.004
Selenium	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.022	0.004	0.005
Zinc (filtered)	0.001	mg/L	0.003	0.022	0.004	0.005
Alkali Metals						
Calcium	0.5	mg/L	60	53	51	50
Magnesium	0.5	mg/L	100	260	250	250
Potassium	0.5	mg/L	6.0	41	38	39
Sodium	0.5	mg/L	510	1900	1800	1800
Pathogens						
E.coli	1	MPN/100mL	-	M15<10	M15<10	10
Thermotolerant Coliforms	1	MPN/100mL	-	2400	48	>16000

Client Sample ID			QC65	QC66	QC67
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ma15762	M16-Ma15763	M16-Ma15764
Date Sampled			Mar 16, 2016	Mar 16, 2016	Mar 16, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	-	-	< 10
Chloride	1	mg/L	-	-	1300
Conductivity (at 25°C)	1	uS/cm	-	-	4100
pH	0.1	pH Units	-	-	7.7
Phosphate total (as P)	0.05	mg/L	-	-	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05
Sulphate (as S)	5	mg/L	-	-	31
Total Dissolved Solids	10	mg/L	-	-	2700
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	55
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	-	-	< 0.01
Nitrate (as N)	0.02	mg/L	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.8
Total Nitrogen (as N)	0.2	mg/L	-	-	0.8
Heavy Metals					
Aluminium	0.05	mg/L	-	-	0.12
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	1.6
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.42
Lead	0.001	mg/L	-	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.16
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.15
Mercury	0.0001	mg/L	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	-	0.005
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005
Alkali Metals					
Calcium	0.5	mg/L	-	-	12
Magnesium	0.5	mg/L	-	-	82
Potassium	0.5	mg/L	-	-	19
Sodium	0.5	mg/L	-	-	640

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 17, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 18, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 17, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 17, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 17, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 18, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 18, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 17, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 18, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 17, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 17, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 17, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 17, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 17, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 17, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 17, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 17, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 17, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Chloride	%	106	70-130	Pass			
Phosphate total (as P)	%	96	70-130	Pass			
Sulphate (as S)	%	109	70-130	Pass			
Total Dissolved Solids	%	88	70-130	Pass			
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	97	70-130	Pass			
Nitrate (as N)	%	93	70-130	Pass			
Nitrite (as N)	%	100	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	91	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	120	80-120	Pass			
Aluminium (filtered)	%	98	80-120	Pass			
Arsenic	%	100	80-120	Pass			
Arsenic (filtered)	%	100	80-120	Pass			
Cadmium	%	99	70-130	Pass			
Cadmium (filtered)	%	99	70-130	Pass			
Chromium	%	97	80-120	Pass			
Chromium (filtered)	%	97	80-120	Pass			
Copper	%	99	80-120	Pass			
Copper (filtered)	%	99	80-120	Pass			
Iron	%	102	80-120	Pass			
Iron (filtered)	%	102	80-120	Pass			
Lead	%	99	80-120	Pass			
Lead (filtered)	%	99	80-120	Pass			
Manganese	%	100	80-120	Pass			
Manganese (filtered)	%	100	80-120	Pass			
Mercury	%	83	75-125	Pass			
Mercury (filtered)	%	83	70-130	Pass			
Nickel	%	98	80-120	Pass			
Nickel (filtered)	%	98	80-120	Pass			
Selenium	%	101	80-120	Pass			
Selenium (filtered)	%	101	80-120	Pass			
Zinc	%	100	80-120	Pass			
Zinc (filtered)	%	100	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	94	70-130	Pass			
Magnesium	%	103	70-130	Pass			
Potassium	%	86	70-130	Pass			
Sodium	%	90	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Phosphate total (as P)	M16-Ma15746	CP	%	111	70-130	Pass	
Spike - % Recovery							
Nitrogens (speciated)							
				Result 1			
Ammonia (as N)	M16-Ma15334	NCP	%	97	70-130	Pass	
Nitrate (as N)	M16-Ma15334	NCP	%	93	70-130	Pass	
Nitrite (as N)	M16-Ma15334	NCP	%	102	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma15746	CP	%	100	70-130	Pass	
Spike - % Recovery							
Heavy Metals							
				Result 1			

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	B16-Ma17126	NCP	%	97		75-125	Pass	
Arsenic (filtered)	M16-Ma18683	NCP	%	94		70-130	Pass	
Cadmium (filtered)	S16-Ma14945	NCP	%	109		70-130	Pass	
Chromium (filtered)	M16-Ma18683	NCP	%	87		70-130	Pass	
Copper	B16-Ma17126	NCP	%	95		75-125	Pass	
Copper (filtered)	M16-Ma18683	NCP	%	87		70-130	Pass	
Iron (filtered)	M16-Ma18683	NCP	%	86		70-130	Pass	
Lead (filtered)	M16-Ma18683	NCP	%	89		70-130	Pass	
Manganese	B16-Ma17126	NCP	%	95		75-125	Pass	
Manganese (filtered)	M16-Ma16654	NCP	%	96		70-130	Pass	
Mercury (filtered)	M16-Ma18683	NCP	%	77		70-130	Pass	
Nickel	B16-Ma17126	NCP	%	95		75-125	Pass	
Nickel (filtered)	M16-Ma18683	NCP	%	83		70-130	Pass	
Selenium	B16-Ma17126	NCP	%	90		75-125	Pass	
Selenium (filtered)	M16-Ma18683	NCP	%	89		70-130	Pass	
Zinc	B16-Ma17126	NCP	%	92		75-125	Pass	
Zinc (filtered)	M16-Ma18683	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ma15746	CP	%	97		70-130	Pass	
Magnesium	M16-Ma15746	CP	%	96		70-130	Pass	
Potassium	M16-Ma15746	CP	%	85		70-130	Pass	
Sodium	M16-Ma15746	CP	%	97		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma15747	CP	%	91		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Chromium	B16-Ma17126	NCP	%	92		75-125	Pass	
Lead	B16-Ma17126	NCP	%	97		75-125	Pass	
Mercury	B16-Ma17126	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	S16-Ma19641	NCP	%	76		75-125	Pass	
Iron	M16-Ma16664	NCP	%	90		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ma15753	CP	%	89		70-130	Pass	
Phosphorus reactive (as P)	M16-Ma15753	CP	%	100		70-130	Pass	
Sulphate (as S)	M16-Ma15753	CP	%	114		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ma15755	CP	%	97		70-130	Pass	
Phosphorus reactive (as P)	M16-Ma15755	CP	%	108		70-130	Pass	
Sulphate (as S)	M16-Ma15755	CP	%	89		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ma15757	CP	%	94		70-130	Pass	
Magnesium	M16-Ma15757	CP	%	97		70-130	Pass	
Potassium	M16-Ma15757	CP	%	87		70-130	Pass	
Sodium	M16-Ma15757	CP	%	108		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
pH	M16-Ma15746	CP	pH Units	7.7	7.7	pass	30%	Pass	
Phosphate total (as P)	M16-Ma15746	CP	mg/L	0.34	0.37	9.0	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma15746	CP	mg/L	100	100	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ma15746	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma15746	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Ma15746	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M16-Ma15746	CP	mg/L	4.0	4.6	12	30%	Pass	
Arsenic	B16-Ma17126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Ma18683	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium (filtered)	S16-Ma14944	NCP	mg/L	0.0003	0.0003	<1	30%	Pass	
Chromium	M16-Ma15746	CP	mg/L	0.009	0.011	14	30%	Pass	
Chromium (filtered)	M16-Ma18683	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Copper	B16-Ma17126	NCP	mg/L	0.006	0.005	16	30%	Pass	
Copper (filtered)	M16-Ma18683	NCP	mg/L	0.006	0.005	7.0	30%	Pass	
Iron	M16-Ma15746	CP	mg/L	58	59	<1	30%	Pass	
Lead	M16-Ma15746	CP	mg/L	0.025	0.033	26	30%	Pass	
Lead (filtered)	M16-Ma18683	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese	B16-Ma17126	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-Ma18683	NCP	mg/L	2.9	2.7	9.0	30%	Pass	
Mercury	M16-Ma15746	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ma18683	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Nickel	B16-Ma17126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Ma18683	NCP	mg/L	0.027	0.025	6.0	30%	Pass	
Selenium	B16-Ma17126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ma18683	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M16-Ma15746	CP	mg/L	54	54	1.0	30%	Pass	
Magnesium	M16-Ma15746	CP	mg/L	21	21	2.0	30%	Pass	
Potassium	M16-Ma15746	CP	mg/L	6.8	5.8	14	30%	Pass	
Sodium	M16-Ma15746	CP	mg/L	130	130	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Ma15748	CP	mg/L	16	19	16	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Ma15748	CP	mg/L	0.8	0.9	6.4	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Ma15749	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	M16-Ma15749	CP	mg/L	2.1	2.1	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Ma15750	CP	mg/L	4600	4700	3.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ma15753	CP	mg/L	380	380	<1	30%	Pass
Phosphorus reactive (as P)	M16-Ma15753	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma15753	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ma15755	CP	mg/L	1400	1400	1.00	30%	Pass
Phosphorus reactive (as P)	M16-Ma15755	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma15755	CP	mg/L	29	29	<1	30%	Pass
Turbidity	B16-Ma14892	NCP	NTU	23	23	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
pH	M16-Ma15756	CP	pH Units	7.6	7.5	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma15756	CP	mg/L	59	59	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ma15756	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma15756	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ma15756	CP	mg/L	0.13	0.11	17	30%	Pass
Zinc	M16-Ma15756	CP	mg/L	0.004	0.005	15	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma15757	CP	mg/L	11	12	4.0	30%	Pass
Magnesium	M16-Ma15757	CP	mg/L	76	79	4.0	30%	Pass
Potassium	M16-Ma15757	CP	mg/L	20	19	4.0	30%	Pass
Sodium	M16-Ma15757	CP	mg/L	660	610	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ma15758	CP	mg/L	1.1	0.97	16	30%	Pass
Nitrate (as N)	M16-Ma15758	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Nitrite (as N)	M16-Ma15758	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ma15759	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Zinc (filtered)	M16-Ma15759	CP	mg/L	0.022	0.020	6.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ma15760	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Ma15761	CP	mg/L	8800	8200	7.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	No
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **L_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERTH04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 18, 2016 8:45 AM**
Eurofins | mgt reference: **493525**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **493525-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERTH04483AA**
 Received Date **Mar 18, 2016**

Client Sample ID			MW28	MW27	MW26	MW25
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma18212	M16-Ma18213	M16-Ma18214	M16-Ma18215
Date Sampled			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	15	26	37	23
Chloride	1	mg/L	49	30	74	19
Conductivity (at 25°C)	1	uS/cm	270	190	340	240
pH	0.1	pH Units	4.3	4.0	4.3	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	5.9	6.3	13	7.3
Total Dissolved Solids	10	mg/L	^{Q19} 190	^{Q19} 180	^{Q19} 280	^{Q19} 130
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.17	0.32	0.05
Nitrate (as N)	0.02	mg/L	4.5	< 0.02	< 0.02	12
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.8	1.2	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	1.0	1.5	0.8
Total Nitrogen (as N)	0.2	mg/L	4.8	1.0	1.5	13
Heavy Metals						
Aluminium	0.05	mg/L	0.65	0.87	3.9	5.5
Aluminium (filtered)	0.05	mg/L	0.49	0.59	1.8	1.5
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.008	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.004	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	0.06	0.62	1.4	0.33
Iron (filtered)	0.05	mg/L	< 0.05	0.12	0.64	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.004	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-Ma18212	M16-Ma18213	M16-Ma18214	M16-Ma18215
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.002	0.004	0.004	0.004
Zinc (filtered)	0.001	mg/L	0.002	0.004	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	2.3	2.1	5.9	9.0
Magnesium	0.5	mg/L	5.6	5.0	8.5	9.2
Potassium	0.5	mg/L	2.7	3.1	1.6	2.7
Sodium	0.5	mg/L	28	14	39	28

Client Sample ID			MW24 Water	MW23 Water	MW18 Water	MW16 Water
Sample Matrix			M16-Ma18216	M16-Ma18217	M16-Ma18218	M16-Ma18219
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	61	< 10	30	10
Chloride	1	mg/L	160	35	78	68
Conductivity (at 25°C)	1	uS/cm	670	190	250	320
pH	0.1	pH Units	4.3	6.4	4.6	5.6
Phosphate total (as P)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	22	12	7.2	8.3
Total Dissolved Solids	10	mg/L	^{Q19} 410	^{Q19} 110	^{Q19} 160	^{Q19} 240
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.26	< 0.01	0.16	< 0.01
Nitrate (as N)	0.02	mg/L	0.09	2.8	0.02	7.1
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	< 0.2	0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	< 0.2	0.4	< 0.2
Total Nitrogen (as N)	0.2	mg/L	1.4	2.8	0.4	7.1
Heavy Metals						
Aluminium	0.05	mg/L	15	8.1	17	1.2
Aluminium (filtered)	0.05	mg/L	1.5	0.17	0.67	0.61
Arsenic	0.001	mg/L	0.003	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.023	0.006	0.017	0.002

Client Sample ID			MW24	MW23	MW18	MW16
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma18216	M16-Ma18217	M16-Ma18218	M16-Ma18219
Date Sampled			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.009	0.004	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	3.4	0.75	7.7	0.88
Iron (filtered)	0.05	mg/L	0.24	0.22	5.9	0.24
Lead	0.001	mg/L	0.016	0.004	0.025	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Manganese	0.005	mg/L	< 0.005	0.014	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0004	0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.002	0.005	0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.008	0.007	0.002
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.007	0.002
Alkali Metals						
Calcium	0.5	mg/L	6.5	11	2.2	24
Magnesium	0.5	mg/L	12	2.0	4.1	4.8
Potassium	0.5	mg/L	1.6	2.5	1.3	1.0
Sodium	0.5	mg/L	98	20	36	24

Client Sample ID			MW15	MW14	MW13	MW12
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma18220	M16-Ma18221	M16-Ma18222	M16-Ma18223
Date Sampled			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	21	19	30	25
Chloride	1	mg/L	42	37	54	41
Conductivity (at 25°C)	1	uS/cm	240	190	240	180
pH	0.1	pH Units	4.4	4.4	3.8	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	18	9.0	13	8.9
Total Dissolved Solids	10	mg/L	^{Q19} 170	^{Q19} 150	^{Q19} 160	^{Q19} 120
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.19	< 0.01	0.05	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	2.0	0.04	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	< 0.2	0.3	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.5	2.0	0.3	< 0.2

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-Ma18220	M16-Ma18221	M16-Ma18222	M16-Ma18223
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	7.6	9.5	7.8	4.4
Aluminium (filtered)	0.05	mg/L	0.36	0.71	2.2	2.6
Arsenic	0.001	mg/L	< 0.001	0.001	0.003	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00011	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00011	< 0.00005
Chromium	0.001	mg/L	0.012	0.013	0.008	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	8.8	2.1	11	3.2
Iron (filtered)	0.05	mg/L	5.7	0.64	1.6	0.82
Lead	0.001	mg/L	0.015	0.013	0.005	< 0.001
Lead (filtered)	0.001	mg/L	0.002	0.002	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.005	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.003
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.006	0.009	0.003
Zinc (filtered)	0.001	mg/L	0.003	0.002	0.007	0.001
Alkali Metals						
Calcium	0.5	mg/L	5.1	5.7	3.8	0.7
Magnesium	0.5	mg/L	7.3	4.4	4.9	4.5
Potassium	0.5	mg/L	1.5	< 0.5	1.0	0.5
Sodium	0.5	mg/L	22	15	26	23

Client Sample ID			MW11 Water	MW10 Water	MW9 Water	QC71 Water
Sample Matrix			M16-Ma18224	M16-Ma18225	M16-Ma18226	M16-Ma18227
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	54	15	18	34
Chloride	1	mg/L	140	27	19	74
Conductivity (at 25°C)	1	uS/cm	800	260	85	250
pH	0.1	pH Units	4.1	6.8	4.6	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	0.08	0.09	0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	55	7.8	< 5	7.2
Total Dissolved Solids	10	mg/L	^{Q19} 520	^{Q19} 210	^{Q19} 48	^{Q19} 140
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	49	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW11 Water	MW10 Water	MW9 Water	QC71 Water
Sample Matrix			M16-Ma18224	M16-Ma18225	M16-Ma18226	M16-Ma18227
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016	Mar 17, 2016	Mar 17, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.10	0.70	0.12	0.17
Nitrate (as N)	0.02	mg/L	< 0.02	2.5	0.58	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.09	0.04	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.9	0.4	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	1.6	0.5	0.5
Total Nitrogen (as N)	0.2	mg/L	0.3	4.2	1.1	0.5
Heavy Metals						
Aluminium	0.05	mg/L	9.7	8.0	15	19
Aluminium (filtered)	0.05	mg/L	4.3	0.37	0.58	0.71
Arsenic	0.001	mg/L	0.003	0.007	0.004	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Cadmium	0.00005	mg/L	0.00007	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00007	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.016	0.013	0.017
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.005	0.004	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	15	36	2.9	8.3
Iron (filtered)	0.05	mg/L	8.4	3.5	1.7	3.3
Lead	0.001	mg/L	0.017	0.007	0.008	0.027
Lead (filtered)	0.001	mg/L	0.006	< 0.001	< 0.001	0.003
Manganese	0.005	mg/L	< 0.005	0.018	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.016	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.010	0.005	0.003	0.005
Nickel (filtered)	0.001	mg/L	0.008	0.002	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.023	0.007	0.003
Zinc (filtered)	0.001	mg/L	0.006	0.014	0.004	0.003
Alkali Metals						
Calcium	0.5	mg/L	2.5	28	3.6	2.1
Magnesium	0.5	mg/L	25	5.0	1.5	4.0
Potassium	0.5	mg/L	0.7	1.7	0.7	1.2
Sodium	0.5	mg/L	95	11	9.5	36

Client Sample ID			QC70 Water	QC69 Water
Sample Matrix			M16-Ma18228	M16-Ma18229
Eurofins mgt Sample No.			Mar 17, 2016	Mar 17, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			QC70	QC69
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Ma18228	M16-Ma18229
Date Sampled			Mar 17, 2016	Mar 17, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 21, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 22, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 21, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 21, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 18, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 22, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 22, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 18, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 21, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 21, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 21, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 21, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 21, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 21, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 18, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 18, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 18, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 18, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Chloride	%	116	70-130	Pass			
Phosphate total (as P)	%	95	70-130	Pass			
Sulphate (as S)	%	115	70-130	Pass			
Total Dissolved Solids	%	89	70-130	Pass			
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	95	70-130	Pass			
Nitrate (as N)	%	95	70-130	Pass			
Nitrite (as N)	%	109	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	78	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	120	80-120	Pass			
Aluminium (filtered)	%	120	80-120	Pass			
Arsenic	%	98	80-120	Pass			
Arsenic (filtered)	%	98	80-120	Pass			
Cadmium	%	107	70-130	Pass			
Cadmium (filtered)	%	101	70-130	Pass			
Chromium	%	106	80-120	Pass			
Chromium (filtered)	%	93	80-120	Pass			
Copper	%	98	80-120	Pass			
Copper (filtered)	%	95	80-120	Pass			
Iron	%	113	80-120	Pass			
Iron (filtered)	%	93	80-120	Pass			
Lead	%	83	80-120	Pass			
Lead (filtered)	%	97	80-120	Pass			
Manganese	%	109	80-120	Pass			
Manganese (filtered)	%	96	80-120	Pass			
Mercury	%	92	75-125	Pass			
Mercury (filtered)	%	92	70-130	Pass			
Nickel	%	103	80-120	Pass			
Nickel (filtered)	%	96	80-120	Pass			
Selenium	%	98	80-120	Pass			
Selenium (filtered)	%	98	80-120	Pass			
Zinc	%	98	80-120	Pass			
Zinc (filtered)	%	98	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	89	70-130	Pass			
Magnesium	%	99	70-130	Pass			
Potassium	%	90	70-130	Pass			
Sodium	%	85	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Chloride	M16-Ma18212	CP	%	99	70-130	Pass	
Phosphorus reactive (as P)	M16-Ma18212	CP	%	103	70-130	Pass	
Sulphate (as S)	M16-Ma18212	CP	%	108	70-130	Pass	
Spike - % Recovery							
Alkalinity (speciated)							
				Result 1			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma18933	NCP	%	115	70-130	Pass	
Spike - % Recovery							
Nitrogens (speciated)							
				Result 1			
Ammonia (as N)	M16-Ma17232	NCP	%	98	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nitrate (as N)	M16-Ma17232	NCP	%	101		70-130	Pass	
Nitrite (as N)	M16-Ma17232	NCP	%	112		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	M16-Ma21758	NCP	%	97		70-130	Pass	
Cadmium	M16-Ma20518	NCP	%	97		70-130	Pass	
Cadmium (filtered)	S16-Ma06193	NCP	%	101		70-130	Pass	
Chromium (filtered)	M16-Ma21758	NCP	%	90		70-130	Pass	
Copper (filtered)	M16-Ma21758	NCP	%	90		70-130	Pass	
Iron (filtered)	M16-Ma21758	NCP	%	87		70-130	Pass	
Lead (filtered)	M16-Ma21758	NCP	%	92		70-130	Pass	
Manganese (filtered)	M16-Ma21758	NCP	%	88		70-130	Pass	
Mercury (filtered)	M16-Ma21758	NCP	%	83		70-130	Pass	
Nickel (filtered)	M16-Ma21758	NCP	%	90		70-130	Pass	
Selenium (filtered)	M16-Ma21758	NCP	%	94		70-130	Pass	
Zinc (filtered)	M16-Ma21758	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ma18212	CP	%	91		70-130	Pass	
Magnesium	M16-Ma18212	CP	%	90		70-130	Pass	
Potassium	M16-Ma18212	CP	%	82		70-130	Pass	
Sodium	M16-Ma18212	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ma18221	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ma18222	CP	%	112		70-130	Pass	
Phosphorus reactive (as P)	M16-Ma18222	CP	%	101		70-130	Pass	
Sulphate (as S)	M16-Ma18222	CP	%	105		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ma18222	CP	%	88		70-130	Pass	
Magnesium	M16-Ma18222	CP	%	98		70-130	Pass	
Sodium	M16-Ma18222	CP	%	87		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Ma18227	CP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Ma22504	NCP	%	94		75-125	Pass	
Chromium	M16-Ma22504	NCP	%	96		75-125	Pass	
Copper	M16-Ma22504	NCP	%	92		75-125	Pass	
Iron	M16-Ma21401	NCP	%	102		75-125	Pass	
Lead	M16-Ma22504	NCP	%	97		75-125	Pass	
Manganese	M16-Ma22504	NCP	%	94		75-125	Pass	
Mercury	M16-Ma22504	NCP	%	100		70-130	Pass	
Nickel	M16-Ma22504	NCP	%	93		75-125	Pass	
Selenium	M16-Ma22504	NCP	%	98		75-125	Pass	
Zinc	M16-Ma22504	NCP	%	93		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ma18212	CP	mg/L	49	50	1.8	30%	Pass	
pH	M16-Ma18212	CP	pH Units	4.3	4.2	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Ma18212	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ma18212	CP	mg/L	5.9	5.9	1.3	30%	Pass	
Total Dissolved Solids	M16-Ma18280	NCP	mg/L	2100	2100	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Ma18212	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Ma18212	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Ma18212	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Ma17818	NCP	mg/L	0.04	0.04	6.0	30%	Pass	
Nitrate (as N)	M16-Ma17818	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Ma17818	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Ma20032	NCP	mg/L	0.67	0.63	6.0	30%	Pass	
Aluminium (filtered)	M16-Ma17244	NCP	mg/L	1.2	1.1	5.0	30%	Pass	
Arsenic	B16-Ma17152	NCP	mg/L	0.005	0.005	<1	30%	Pass	
Arsenic (filtered)	M16-Ma21758	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Ma20517	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium (filtered)	S16-Ma06192	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Ma21758	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B16-Ma17152	NCP	mg/L	0.003	0.004	24	30%	Pass	
Copper (filtered)	M16-Ma21758	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	B16-Ma17126	NCP	mg/L	0.07	0.06	17	30%	Pass	
Iron (filtered)	M16-Ma21758	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Ma15746	NCP	mg/L	0.025	0.033	26	30%	Pass	
Lead (filtered)	M16-Ma21758	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	B16-Ma17152	NCP	mg/L	0.24	0.24	<1	30%	Pass	
Manganese (filtered)	M16-Ma21758	NCP	mg/L	0.035	0.035	1.0	30%	Pass	
Mercury	M16-Ma15746	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ma21758	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	B16-Ma17152	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Nickel (filtered)	M16-Ma21758	NCP	mg/L	0.002	0.002	1.0	30%	Pass	
Selenium (filtered)	M16-Ma21758	NCP	mg/L	0.010	0.012	12	30%	Pass	
Zinc	M16-Ma15756	NCP	mg/L	0.004	0.005	15	30%	Pass	
Zinc (filtered)	M16-Ma21758	NCP	mg/L	0.004	0.004	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Ma18212	CP	mg/L	2.3	2.4	2.0	30%	Pass	
Magnesium	M16-Ma18212	CP	mg/L	5.6	6.3	12	30%	Pass	
Potassium	M16-Ma18212	CP	mg/L	2.7	2.7	1.0	30%	Pass	
Sodium	M16-Ma18212	CP	mg/L	28	32	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M16-Ma18214	CP	mg/L	37	36	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH	M16-Ma18221	CP	pH Units	4.4	4.4	pass	30%	Pass	
Phosphate total (as P)	M16-Ma18221	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma18221	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ma18221	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma18221	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Ma18221	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ma18222	CP	mg/L	30	30	2.0	30%	Pass
Chloride	M16-Ma18222	CP	mg/L	54	55	1.0	30%	Pass
Phosphorus reactive (as P)	M16-Ma18222	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma18222	CP	mg/L	13	13	3.8	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma18222	CP	mg/L	3.8	3.8	<1	30%	Pass
Magnesium	M16-Ma18222	CP	mg/L	4.9	4.9	<1	30%	Pass
Potassium	M16-Ma18222	CP	mg/L	1.0	0.9	8.0	30%	Pass
Sodium	M16-Ma18222	CP	mg/L	26	26	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ma18227	CP	mg/L	0.05	0.05	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Ma18227	CP	mg/L	0.5	0.4	12	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Selenium	M16-Ma22504	NCP	mg/L	0.003	0.003	18	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW**
Project ID: **ENAUPT04483AA MONITORING EVENT 2**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 21, 2016 8:28 AM**
Eurofins | mgt reference: **493785**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **493785-W**
 Project name **NL_BASELINE GW_SW**
 Project ID **ENAUPT04483AA MONITORING EVENT 2**
 Received Date **Mar 21, 2016**

Client Sample ID			QC72	QC73	MW17	MW39
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma19950	M16-Ma19951	M16-Ma19952	M16-Ma19953
Date Sampled			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	-	29	< 10
Ammonia (as N)	0.01	mg/L	-	-	0.02	1.1
Chloride	1	mg/L	-	-	31	74
Conductivity (at 25°C)	1	uS/cm	-	-	190	420
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	0.23	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	0.22	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	< 0.02	< 0.02
pH	0.1	pH Units	-	-	4.2	7.2
Phosphate total (as P)	0.05	mg/L	-	-	< 0.05	1.2
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05	1.1
Sulphate (as S)	5	mg/L	-	-	12	8.9
Total Dissolved Solids	10	mg/L	-	-	^{Q19} 130	^{Q19} 250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.3	1.7
Total Nitrogen (as N)	0.2	mg/L	-	-	0.5	1.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	< 20	68
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	-	-	6.4	0.13
Aluminium (filtered)	0.01	mg/L	< 0.01	< 0.01	1.4	< 0.05
Arsenic	0.001	mg/L	-	-	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.009	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	3.0	0.14
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.40	< 0.05
Lead	0.001	mg/L	-	-	0.035	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	mg/L	-	-	< 0.005	0.008
Manganese (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	0.006

Client Sample ID			QC72	QC73	MW17	MW39
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma19950	M16-Ma19951	M16-Ma19952	M16-Ma19953
Date Sampled			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	-	-	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	-	0.001	< 0.001
Selenium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.001	< 0.001
Zinc	0.001	mg/L	-	-	0.002	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	-	-	4.9	17
Magnesium	0.5	mg/L	-	-	4.3	6.9
Potassium	0.5	mg/L	-	-	1.0	14
Sodium	0.5	mg/L	-	-	19	42

Client Sample ID			MW38	MW37	MW36	MW35
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma19954	M16-Ma19955	M16-Ma19956	M16-Ma19957
Date Sampled			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	27	< 10	< 10	62
Ammonia (as N)	0.01	mg/L	0.72	0.62	0.02	0.45
Chloride	1	mg/L	130	20	15	54
Conductivity (at 25°C)	1	uS/cm	540	130	120	250
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	2.6	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	2.6	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
pH	0.1	pH Units	6.3	6.4	6.7	4.3
Phosphate total (as P)	0.05	mg/L	0.64	0.61	0.13	0.60
Phosphorus reactive (as P)	0.05	mg/L	0.35	0.38	0.11	0.60
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	6.9
Total Dissolved Solids	10	mg/L	^{Q19} 380	^{Q19} 110	^{Q19} 95	^{Q19} 390
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	2.0	0.2	2.8
Total Nitrogen (as N)	0.2	mg/L	1.8	2.0	2.8	2.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	50	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	18	0.24	0.07	0.57
Aluminium (filtered)	0.05	mg/L	0.29	0.11	< 0.05	0.35
Arsenic	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.007	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.001	0.001	0.003

Client Sample ID			MW38	MW37	MW36	MW35
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma19954	M16-Ma19955	M16-Ma19956	M16-Ma19957
Date Sampled			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	11	0.08	0.06	0.19
Iron (filtered)	0.05	mg/L	0.30	< 0.05	< 0.05	0.13
Lead	0.001	mg/L	0.015	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	0.0007
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.011	0.010	0.003	0.007
Zinc (filtered)	0.001	mg/L	0.002	0.006	0.002	0.005
Alkali Metals						
Calcium	0.5	mg/L	20	7.2	11	9.6
Magnesium	0.5	mg/L	8.9	2.6	1.6	5.4
Potassium	0.5	mg/L	13	1.6	< 0.5	5.2
Sodium	0.5	mg/L	58	9.3	6.8	23

Client Sample ID			MW34	MW33	MW32	MW31
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma19958	M16-Ma19959	M16-Ma19960	M16-Ma19961
Date Sampled			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	33	12	13	17
Ammonia (as N)	0.01	mg/L	0.41	5.5	0.26	0.21
Chloride	1	mg/L	78	67	86	61
Conductivity (at 25°C)	1	uS/cm	280	390	360	200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	5.3	7.2	5.9	5.6
Phosphate total (as P)	0.05	mg/L	0.33	0.56	0.29	0.13
Phosphorus reactive (as P)	0.05	mg/L	0.33	< 0.05	0.20	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 350	^{Q19} 240	^{Q19} 230	^{Q19} 180
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.3	5.7	1.1	0.9
Total Nitrogen (as N)	0.2	mg/L	2.3	5.7	1.1	0.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	87	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW34 Water	MW33 Water	MW32 Water	MW31 Water
Sample Matrix			M16-Ma19958	M16-Ma19959	M16-Ma19960	M16-Ma19961
Eurofins mgt Sample No.			Mar 18, 2016	Mar 18, 2016	Mar 18, 2016	Mar 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	11	3.3	1.3	35
Aluminium (filtered)	0.05	mg/L	0.96	0.08	0.17	0.41
Arsenic	0.001	mg/L	0.006	0.003	< 0.001	0.003
Arsenic (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.009	0.005	0.002	0.020
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.015	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	9.1	3.7	0.33	0.83
Iron (filtered)	0.05	mg/L	1.9	0.11	0.11	0.19
Lead	0.001	mg/L	0.012	0.009	0.002	0.006
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.011	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.009	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.005	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.012	0.018	0.010	0.005
Zinc (filtered)	0.001	mg/L	0.007	0.002	0.004	0.002
Alkali Metals						
Calcium	0.5	mg/L	10	24	6.2	2.2
Magnesium	0.5	mg/L	5.5	5.2	5.5	5.2
Potassium	0.5	mg/L	7.4	3.4	3.7	2.0
Sodium	0.5	mg/L	35	32	43	32

Client Sample ID			MW30 Water	MW29 Water
Sample Matrix			M16-Ma19962	M16-Ma19963
Eurofins mgt Sample No.			Mar 18, 2016	Mar 18, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Acidity (as CaCO3)				
Acidity (as CaCO3)	10	mg/L	21	23
Ammonia (as N)				
Ammonia (as N)	0.01	mg/L	0.02	0.20
Chloride				
Chloride	1	mg/L	26	45
Conductivity (at 25°C)				
Conductivity (at 25°C)	1	uS/cm	100	260
Nitrate & Nitrite (as N)				
Nitrate & Nitrite (as N)	0.05	mg/L	3.0	0.09
Nitrate (as N)				
Nitrate (as N)	0.02	mg/L	2.9	0.08
Nitrite (as N)				
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02
pH				
pH	0.1	pH Units	3.9	5.2
Phosphate total (as P)				
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05
Phosphorus reactive (as P)				
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05
Sulphate (as S)				
Sulphate (as S)	5	mg/L	< 5	15
Total Dissolved Solids				
Total Dissolved Solids	10	mg/L	^{Q19} 79	^{Q19} 220

Client Sample ID			MW30	MW29
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Ma19962	M16-Ma19963
Date Sampled			Mar 18, 2016	Mar 18, 2016
Test/Reference	LOR	Unit		
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.7
Total Nitrogen (as N)	0.2	mg/L	3.0	0.8
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Heavy Metals				
Aluminium	0.05	mg/L	0.65	2.5
Aluminium (filtered)	0.05	mg/L	0.57	0.87
Arsenic	0.001	mg/L	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	0.05	0.59
Iron (filtered)	0.05	mg/L	< 0.05	0.30
Lead	0.001	mg/L	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.005
Zinc (filtered)	0.001	mg/L	0.003	0.003
Alkali Metals				
Calcium	0.5	mg/L	3.7	7.0
Magnesium	0.5	mg/L	2.4	9.4
Potassium	0.5	mg/L	0.7	1.8
Sodium	0.5	mg/L	14	25

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 22, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 22, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 24, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 22, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 22, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 22, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 22, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 21, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Mar 24, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 24, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 21, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 22, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 21, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 21, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 21, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 21, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 22, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 21, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	103			70-130	Pass	
Ammonia (as N)	%	95			70-130	Pass	
Chloride	%	107			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrate & Nitrite (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	95			70-130	Pass		
Nitrite (as N)	%	103			70-130	Pass		
Phosphate total (as P)	%	102			70-130	Pass		
Sulphate (as S)	%	112			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	102			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	89			80-120	Pass		
Arsenic (filtered)	%	89			80-120	Pass		
Cadmium	%	97			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	99			80-120	Pass		
Chromium (filtered)	%	99			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	93			80-120	Pass		
Iron	%	94			80-120	Pass		
Iron (filtered)	%	91			80-120	Pass		
Lead	%	92			80-120	Pass		
Lead (filtered)	%	90			80-120	Pass		
Manganese	%	96			80-120	Pass		
Manganese (filtered)	%	96			80-120	Pass		
Mercury	%	89			75-125	Pass		
Mercury (filtered)	%	89			70-130	Pass		
Nickel	%	94			80-120	Pass		
Nickel (filtered)	%	94			80-120	Pass		
Selenium	%	97			80-120	Pass		
Selenium (filtered)	%	91			80-120	Pass		
Zinc	%	95			80-120	Pass		
Zinc (filtered)	%	90			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	110			70-130	Pass		
Potassium	%	91			70-130	Pass		
Sodium	%	86			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	S16-Ma21251	NCP	%	103		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Ma19952	CP	%	100		70-130	Pass	
Sulphate (as S)	M16-Ma19952	CP	%	104		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma20399	NCP	%	85		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma20236	NCP	%	79		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Ma23009	NCP	%	92		75-125	Pass	
Arsenic (filtered)	M16-Ma23731	NCP	%	102		70-130	Pass	
Cadmium	S16-Ma19749	NCP	%	101		70-130	Pass	
Chromium	M16-Ma23009	NCP	%	90		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	M16-Ma23731	NCP	%	97			70-130	Pass	
Copper	M16-Ma23009	NCP	%	91			75-125	Pass	
Copper (filtered)	M16-Ma23731	NCP	%	95			70-130	Pass	
Iron	M16-Ma23009	NCP	%	89			75-125	Pass	
Iron (filtered)	M16-Ma23653	NCP	%	85			70-130	Pass	
Lead	M16-Ma23009	NCP	%	113			75-125	Pass	
Lead (filtered)	M16-Ma23731	NCP	%	98			70-130	Pass	
Manganese	M16-Ma23009	NCP	%	93			75-125	Pass	
Manganese (filtered)	M16-Ma22628	NCP	%	77			70-130	Pass	
Mercury	M16-Ma23009	NCP	%	107			70-130	Pass	
Mercury (filtered)	M16-Ma23731	NCP	%	87			70-130	Pass	
Nickel	M16-Ma23009	NCP	%	90			75-125	Pass	
Nickel (filtered)	M16-Ma23731	NCP	%	97			70-130	Pass	
Selenium	M16-Ma23009	NCP	%	93			75-125	Pass	
Selenium (filtered)	M16-Ma23731	NCP	%	98			70-130	Pass	
Zinc	M16-Ma23009	NCP	%	93			75-125	Pass	
Zinc (filtered)	M16-Ma23731	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ma19955	CP	%	89			70-130	Pass	
Magnesium	M16-Ma19955	CP	%	100			70-130	Pass	
Potassium	M16-Ma19955	CP	%	80			70-130	Pass	
Sodium	M16-Ma19955	CP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Ma19959	CP	%	86			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M16-Ma19960	CP	%	96			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Ma19960	CP	%	95			70-130	Pass	
Nitrate (as N)	M16-Ma19960	CP	%	94			70-130	Pass	
Nitrite (as N)	M16-Ma19960	CP	%	105			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ma19963	CP	%	117			70-130	Pass	
Phosphorus reactive (as P)	M16-Ma19963	CP	%	98			70-130	Pass	
Sulphate (as S)	M16-Ma19963	CP	%	108			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium (filtered)	S16-Ma21251	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ma19952	CP	mg/L	31	31	2.5	30%	Pass	
pH	M16-Ma19952	CP	pH Units	4.2	4.2	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Ma19952	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ma19952	CP	mg/L	12	12	1.2	30%	Pass	
Total Dissolved Solids	M16-Ma19434	NCP	mg/L	3700	3700	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma20216	NCP	mg/L	1.8	1.6	12	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma19952	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ma19952	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma19952	CP	mg/L	< 10	< 10	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Ma23731	NCP	mg/L	0.016	0.015	8.0	30%	Pass
Cadmium	S16-Ma19999	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Chromium	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Ma23731	NCP	mg/L	0.001	< 0.001	20	30%	Pass
Copper	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Ma23731	NCP	mg/L	0.002	0.002	11	30%	Pass
Iron	M16-Ma23009	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	M16-Ma23653	NCP	mg/L	0.12	0.12	<1	30%	Pass
Lead	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Ma23731	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Ma23009	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Ma23731	NCP	mg/L	0.74	0.70	5.0	30%	Pass
Mercury	M16-Ma23009	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Ma23731	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-Ma23731	NCP	mg/L	0.003	0.003	13	30%	Pass
Selenium	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Ma21748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Ma23731	NCP	mg/L	0.039	0.036	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-Ma19953	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ma21708	NCP	mg/L	0.68	0.66	3.0	30%	Pass
Aluminium (filtered)	M16-Ma19954	CP	mg/L	0.29	0.30	3.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma19955	CP	mg/L	7.2	8.2	13	30%	Pass
Magnesium	M16-Ma19955	CP	mg/L	2.6	2.5	2.0	30%	Pass
Potassium	M16-Ma19955	CP	mg/L	1.6	1.6	2.0	30%	Pass
Sodium	M16-Ma19955	CP	mg/L	9.3	11	15	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ma19959	CP	mg/L	0.56	0.56	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ma19960	CP	mg/L	0.26	0.23	13	30%	Pass
Nitrate & Nitrite (as N)	M16-Ma19960	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Ma19960	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ma19960	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ma19963	CP	mg/L	45	47	2.6	30%	Pass
Phosphorus reactive (as P)	M16-Ma19963	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma19963	CP	mg/L	15	15	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ma19963	CP	mg/L	0.87	0.95	8.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 22, 2016 8:46 AM**
Eurofins | mgt reference: **493825**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **493825-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Mar 22, 2016**

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW22 Water
Sample Matrix			M16-Ma20214	M16-Ma20215	M16-Ma20216	M16-Ma20217
Eurofins mgt Sample No.			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	130	54	84	52
Ammonia (as N)	0.01	mg/L	0.19	0.07	0.13	0.19
Chloride	1	mg/L	96	82	82	87
Conductivity (at 25°C)	1	uS/cm	410	310	420	390
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	3.6	4.2	4.2	4.0
Phosphate total (as P)	0.05	mg/L	0.11	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	21	12	30	22
Total Dissolved Solids	10	mg/L	260	210	260	240
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.6	2.1	1.8	1.9
Total Nitrogen (as N)	0.2	mg/L	3.6	2.1	1.8	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	38	19	12	5.6
Aluminium (filtered)	0.05	mg/L	11	7.1	5.7	3.9
Arsenic	0.001	mg/L	0.005	0.003	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00014	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.049	0.011	0.005	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.007	0.002	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.95	1.8	23	12
Iron (filtered)	0.05	mg/L	< 0.05	1.5	22	8.5
Lead	0.001	mg/L	0.050	0.017	0.003	0.003
Lead (filtered)	0.001	mg/L	0.001	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW22 Water
Sample Matrix			M16-Ma20214	M16-Ma20215	M16-Ma20216	M16-Ma20217
Eurofins mgt Sample No.			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0004	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.016	0.010	0.010	0.011
Nickel (filtered)	0.001	mg/L	0.007	0.007	0.008	0.008
Selenium	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.050	0.003	0.004	0.002
Zinc (filtered)	0.001	mg/L	0.047	0.002	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	0.8	< 0.5	5.1	14
Magnesium	0.5	mg/L	3.5	4.6	5.9	6.4
Potassium	0.5	mg/L	< 0.5	0.6	1.4	1.5
Sodium	0.5	mg/L	47	42	39	36

Client Sample ID			MW46 Water	SWL15-1 Water	SWL15-2 Water	SWL18-2 Water
Sample Matrix			M16-Ma20218	M16-Ma20219	M16-Ma20220	M16-Ma20221
Eurofins mgt Sample No.			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	21	20	< 10
Ammonia (as N)	0.01	mg/L	0.46	0.10	0.10	< 0.01
Chloride	1	mg/L	640	89	90	3600
Conductivity (at 25°C)	1	uS/cm	2300	350	350	11000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.4	5.0	5.1	8.4
Phosphate total (as P)	0.05	mg/L	0.20	0.68	0.62	0.67
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.50	0.49	0.06
Sulphate (as S)	5	mg/L	5.7	< 5	< 5	110
Total Dissolved Solids	10	mg/L	1400	^{Q19} 280	^{Q19} 300	^{Q19} 5800
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.9	1.3	1.1	3.4
Total Nitrogen (as N)	0.2	mg/L	2.9	1.3	1.1	3.4
Turbidity	1	NTU	-	47	8.1	62
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	240	< 20	< 20	170
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	240	< 20	< 20	180
Heavy Metals						
Aluminium	0.05	mg/L	11	1.6	1.1	0.09
Aluminium (filtered)	0.05	mg/L	< 0.05	0.72	0.72	< 0.05
Arsenic	0.001	mg/L	0.007	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	0.00014	< 0.00005	0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW46	SWL15-1	SWL15-2	SWL18-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma20218	M16-Ma20219	M16-Ma20220	M16-Ma20221
Date Sampled			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium	0.001	mg/L	0.024	0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.028	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	21	0.58	0.44	2.3
Iron (filtered)	0.05	mg/L	0.10	0.26	0.28	0.52
Lead	0.001	mg/L	0.023	0.002	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.038	0.010	0.009	0.49
Manganese (filtered)	0.005	mg/L	0.010	0.007	0.008	0.39
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.021	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.009	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.061	0.017	0.009	0.009
Zinc (filtered)	0.001	mg/L	< 0.001	0.006	0.006	0.002
Alkali Metals						
Calcium	0.5	mg/L	82	4.5	4.6	110
Magnesium	0.5	mg/L	47	6.2	6.3	240
Potassium	0.5	mg/L	5.1	5.3	5.3	36
Sodium	0.5	mg/L	280	40	41	1500
Pathogens						
E.coli	1	MPN/100mL	-	1300	1400	490
Thermotolerant Coliforms	1	MPN/100mL	-	5400	5400	>16000

Client Sample ID			QC74	QC75	QC76
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ma20222	M16-Ma20223	M16-Ma20224
Date Sampled			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	-	-	< 10
Ammonia (as N)	0.01	mg/L	-	-	0.46
Chloride	1	mg/L	-	-	640
Conductivity (at 25°C)	1	uS/cm	-	-	2300
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	< 0.02
pH	0.1	pH Units	-	-	7.5
Phosphate total (as P)	0.05	mg/L	-	-	0.23
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05
Sulphate (as S)	5	mg/L	-	-	7.5
Total Dissolved Solids	10	mg/L	-	-	1500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.9
Total Nitrogen (as N)	0.2	mg/L	-	-	0.9

Client Sample ID			QC74	QC75	QC76
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ma20222	M16-Ma20223	M16-Ma20224
Date Sampled			Mar 21, 2016	Mar 21, 2016	Mar 21, 2016
Test/Reference	LOR	Unit			
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	240
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	240
Heavy Metals					
Aluminium	0.05	mg/L	-	-	3.9
Aluminium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.05
Arsenic	0.001	mg/L	-	-	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	0.00034
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	6.0
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.09
Lead	0.001	mg/L	-	-	0.011
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.046
Manganese (filtered)	0.001	mg/L	< 0.001	< 0.001	0.012
Mercury	0.0001	mg/L	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	-	0.001
Selenium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.001
Zinc	0.001	mg/L	-	-	0.069
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.001
Alkali Metals					
Calcium	0.5	mg/L	-	-	81
Magnesium	0.5	mg/L	-	-	47
Potassium	0.5	mg/L	-	-	5.1
Sodium	0.5	mg/L	-	-	280

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 22, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 22, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 29, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 22, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 22, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 22, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 22, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 22, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Mar 29, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 29, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 22, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 23, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 23, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 22, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 22, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 22, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 22, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 22, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 22, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	101			70-130	Pass		
Ammonia (as N)	%	95			70-130	Pass		
Chloride	%	122			70-130	Pass		
Nitrate & Nitrite (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Nitrite (as N)	%	106			70-130	Pass		
Phosphate total (as P)	%	103			70-130	Pass		
Sulphate (as S)	%	107			70-130	Pass		
Total Dissolved Solids	%	91			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	102			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	%	100			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	120			80-120	Pass		
Aluminium (filtered)	%	120			80-120	Pass		
Arsenic	%	93			80-120	Pass		
Arsenic (filtered)	%	93			80-120	Pass		
Cadmium	%	100			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	99			80-120	Pass		
Chromium (filtered)	%	89			80-120	Pass		
Copper	%	91			80-120	Pass		
Copper (filtered)	%	88			80-120	Pass		
Iron	%	104			80-120	Pass		
Iron (filtered)	%	92			80-120	Pass		
Lead	%	112			80-120	Pass		
Lead (filtered)	%	88			80-120	Pass		
Manganese	%	105			80-120	Pass		
Manganese (filtered)	%	95			80-120	Pass		
Mercury	%	83			75-125	Pass		
Mercury (filtered)	%	83			70-130	Pass		
Nickel	%	99			80-120	Pass		
Nickel (filtered)	%	89			80-120	Pass		
Selenium	%	92			80-120	Pass		
Selenium (filtered)	%	92			80-120	Pass		
Zinc	%	107			80-120	Pass		
Zinc (filtered)	%	92			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	114			70-130	Pass		
Magnesium	%	125			70-130	Pass		
Potassium	%	105			70-130	Pass		
Sodium	%	87			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Ma19960	NCP	%	96		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Ma19960	NCP	%	95		70-130	Pass	
Nitrate (as N)	M16-Ma19960	NCP	%	94		70-130	Pass	
Nitrite (as N)	M16-Ma19960	NCP	%	105		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma20399	NCP	%	85		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma20236	NCP	%	79			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Ma19901	NCP	%	120			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Ma20268	NCP	%	94			75-125	Pass	
Cadmium	M16-Ma20403	NCP	%	102			70-130	Pass	
Chromium	M16-Ma20268	NCP	%	95			75-125	Pass	
Copper	M16-Ma20268	NCP	%	93			75-125	Pass	
Iron	M16-Ma20268	NCP	%	94			75-125	Pass	
Iron (filtered)	M16-Ma16654	NCP	%	89			70-130	Pass	
Lead	M16-Ma20268	NCP	%	96			75-125	Pass	
Lead (filtered)	B16-Ma19207	NCP	%	91			70-130	Pass	
Manganese	M16-Ma20268	NCP	%	93			75-125	Pass	
Mercury	M16-Ma20268	NCP	%	87			70-130	Pass	
Nickel	M16-Ma20268	NCP	%	93			75-125	Pass	
Selenium	M16-Ma20268	NCP	%	89			75-125	Pass	
Zinc	M16-Ma20268	NCP	%	93			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ma21502	NCP	%	99			70-130	Pass	
Magnesium	M16-Ma21502	NCP	%	107			70-130	Pass	
Potassium	M16-Ma21502	NCP	%	89			70-130	Pass	
Sodium	M16-Ma18289	NCP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Ma20216	CP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ma20217	CP	%	105			70-130	Pass	
Phosphorus reactive (as P)	M16-Ma20217	CP	%	103			70-130	Pass	
Sulphate (as S)	M16-Ma20217	CP	%	103			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	M16-Ma20223	CP	%	108			70-130	Pass	
Arsenic (filtered)	M16-Ma20223	CP	%	107			70-130	Pass	
Cadmium (filtered)	M16-Ma20223	CP	%	106			70-130	Pass	
Chromium (filtered)	M16-Ma20223	CP	%	109			70-130	Pass	
Copper (filtered)	M16-Ma20223	CP	%	89			70-130	Pass	
Manganese (filtered)	M16-Ma20223	CP	%	110			70-130	Pass	
Mercury (filtered)	M16-Ma20223	CP	%	92			70-130	Pass	
Nickel (filtered)	M16-Ma20223	CP	%	109			70-130	Pass	
Selenium (filtered)	M16-Ma20223	CP	%	79			70-130	Pass	
Zinc (filtered)	M16-Ma20223	CP	%	117			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Ma20214	CP	mg/L	0.19	0.17	10	30%	Pass	
Conductivity (at 25°C)	M16-Ma20214	CP	uS/cm	410	510	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Ma20214	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Ma20214	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Ma20214	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M16-Ma20214	CP	pH Units	3.6	3.6	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma20214	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ma20214	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma20214	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Ma20214	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ma20032	NCP	mg/L	0.67	0.63	6.0	30%	Pass
Arsenic	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Ma20402	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Chromium	M16-Ma20032	NCP	mg/L	0.003	0.003	4.0	30%	Pass
Copper	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Ma20268	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Ma20268	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Ma20268	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ma20268	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma20116	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Magnesium	M16-Ma18289	NCP	mg/L	1.5	1.6	4.0	30%	Pass
Potassium	M16-Ma20235	NCP	mg/L	0.8	0.8	1.0	30%	Pass
Sodium	M16-Ma18289	NCP	mg/L	5.2	5.3	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ma20216	CP	mg/L	84	83	2.0	30%	Pass
Phosphate total (as P)	M16-Ma20216	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-Ma20216	CP	mg/L	1.8	1.6	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ma20217	CP	mg/L	87	89	1.6	30%	Pass
Phosphorus reactive (as P)	M16-Ma20217	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ma20217	CP	mg/L	22	23	7.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ma20222	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Arsenic (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Ma20222	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Ma20222	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M16-Ma20222	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Ma20222	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Ma20222	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Zinc (filtered)	M16-Ma20222	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Ma20224	CP	mg/L	1500	1500	4.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 23, 2016 8:53 AM**
Eurofins | mgt reference: **494000**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No micro bottle provided for MW41 - unable to perform micro testing.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **494000-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Mar 23, 2016**

Client Sample ID			MW45 Water	MW47 Water	MW40 Water	MW41 Water
Sample Matrix			M16-Ma21708	M16-Ma21709	M16-Ma21710	M16-Ma21711
Eurofins mgt Sample No.			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	19	61
Ammonia (as N)	0.01	mg/L	0.46	0.24	0.40	0.40
Chloride	1	mg/L	450	610	75	160
Conductivity (at 25°C)	1	uS/cm	1800	2400	280	620
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	8.2	8.2	4.8	3.7
Phosphate total (as P)	0.05	mg/L	0.13	0.15	< 0.05	0.47
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.05	< 0.05	0.34
Sulphate (as S)	5	mg/L	8.1	12	< 5	6.1
Total Dissolved Solids	10	mg/L	1000	1300	^{Q19} 240	^{Q19} 540
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.2	0.8	2.0
Total Nitrogen (as N)	0.2	mg/L	0.5	0.2	0.8	2.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	210	220	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	210	220	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.68	7.7	1.4	1.2
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	1.1	0.91
Arsenic	0.001	mg/L	< 0.001	0.009	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00006	< 0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.021	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.005	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.47	7.9	0.35	0.49
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.28	0.36
Lead	0.001	mg/L	< 0.001	0.017	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.10	< 0.005	< 0.005

Client Sample ID			MW45	MW47	MW40	MW41
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma21708	M16-Ma21709	M16-Ma21710	M16-Ma21711
Date Sampled			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	0.079	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.014	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.006	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.002	0.017	0.001	0.006
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Alkali Metals						
Calcium	0.5	mg/L	59	71	2.0	5.6
Magnesium	0.5	mg/L	36	48	5.1	12
Potassium	0.5	mg/L	5.0	5.1	1.9	2.1
Sodium	0.5	mg/L	230	320	40	74

Client Sample ID			SWL17-1	SWL17-2	SWL17-3	QC77
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma21712	M16-Ma21713	M16-Ma21714	M16-Ma21715
Date Sampled			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	33	33	33	-
Ammonia (as N)	0.01	mg/L	0.04	0.04	0.03	-
Chloride	1	mg/L	64	64	61	-
Conductivity (at 25°C)	1	uS/cm	290	290	290	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
pH	0.1	pH Units	4.0	4.0	4.0	-
Phosphate total (as P)	0.05	mg/L	0.30	0.35	0.31	-
Phosphorus reactive (as P)	0.05	mg/L	0.22	0.21	0.22	-
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	-
Total Dissolved Solids	10	mg/L	^{Q19} 250	^{Q19} 260	^{Q19} 250	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	1.3	1.2	-
Total Nitrogen (as N)	0.2	mg/L	1.2	1.3	1.2	-
Turbidity	1	NTU	4.4	21	6.4	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Heavy Metals						
Aluminium	0.05	mg/L	0.50	0.63	0.59	-
Aluminium (filtered)	0.05	mg/L	0.44	0.47	0.44	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			SWL17-1	SWL17-2	SWL17-3	QC77
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ma21712	M16-Ma21713	M16-Ma21714	M16-Ma21715
Date Sampled			Mar 22, 2016	Mar 22, 2016	Mar 22, 2016	Mar 22, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.25	0.32	0.26	-
Iron (filtered)	0.05	mg/L	0.18	0.19	0.18	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.018	0.005	-
Zinc (filtered)	0.001	mg/L	0.002	0.010	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	1.9	2.1	1.8	-
Magnesium	0.5	mg/L	6.1	6.3	6.1	-
Potassium	0.5	mg/L	1.8	1.8	1.7	-
Sodium	0.5	mg/L	35	35	34	-
Pathogens						
E.coli	1	MPN/100mL	74	110	41	-
Thermotolerant Coliforms	1	MPN/100mL	150	110	200	-

Client Sample ID			QC78
Sample Matrix			Water
Eurofins mgt Sample No.			M16-Ma21716
Date Sampled			Mar 22, 2016
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: APHA 2310 Acidity	Melbourne	Mar 23, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 23, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Mar 30, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 23, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 23, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Mar 30, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Mar 30, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 23, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 29, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 29, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 23, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 23, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Mar 23, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Mar 23, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 23, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 23, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 23, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 24, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (Eurofins mgt uses NATA accredited in-house method LTM-GEN-7010)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	100			70-130	Pass	
Ammonia (as N)	%	95			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	103			70-130	Pass		
Nitrate & Nitrite (as N)	%	91			70-130	Pass		
Nitrate (as N)	%	91			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Phosphate total (as P)	%	106			70-130	Pass		
Sulphate (as S)	%	116			70-130	Pass		
Total Dissolved Solids	%	94			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	86			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)	%	99			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	100			80-120	Pass		
Arsenic (filtered)	%	100			80-120	Pass		
Chromium	%	94			80-120	Pass		
Chromium (filtered)	%	94			80-120	Pass		
Copper	%	101			80-120	Pass		
Copper (filtered)	%	95			80-120	Pass		
Iron	%	93			80-120	Pass		
Iron (filtered)	%	93			80-120	Pass		
Lead	%	95			80-120	Pass		
Lead (filtered)	%	95			80-120	Pass		
Manganese	%	96			80-120	Pass		
Manganese (filtered)	%	96			80-120	Pass		
Mercury	%	92			75-125	Pass		
Mercury (filtered)	%	92			70-130	Pass		
Nickel	%	95			80-120	Pass		
Nickel (filtered)	%	95			80-120	Pass		
Selenium	%	104			80-120	Pass		
Selenium (filtered)	%	104			80-120	Pass		
Zinc	%	95			80-120	Pass		
Zinc (filtered)	%	95			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	93			70-130	Pass		
Magnesium	%	105			70-130	Pass		
Potassium	%	85			70-130	Pass		
Sodium	%	90			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Ma22544	NCP	%	95		70-130	Pass	
Chloride	M16-Ma21708	CP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Ma22544	NCP	%	92		70-130	Pass	
Nitrate (as N)	M16-Ma22544	NCP	%	92		70-130	Pass	
Nitrite (as N)	M16-Ma22544	NCP	%	101		70-130	Pass	
Phosphate total (as P)	S16-Ma20888	NCP	%	86		70-130	Pass	
Phosphorus reactive (as P)	M16-Ma21708	CP	%	126		70-130	Pass	
Sulphate (as S)	M16-Ma21708	CP	%	102		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma20713	NCP	%	77		70-130	Pass	
Spike - % Recovery								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Ma22539	NCP	%	73		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Ma23009	NCP	%	92			75-125	Pass	
Arsenic (filtered)	M16-Ma23653	NCP	%	106			70-130	Pass	
Cadmium	M16-Ma20403	NCP	%	102			70-130	Pass	
Cadmium (filtered)	S16-Ma20435	NCP	%	91			70-130	Pass	
Chromium	M16-Ma23009	NCP	%	90			75-125	Pass	
Chromium (filtered)	M16-Ma23653	NCP	%	98			70-130	Pass	
Copper	M16-Ma23713	NCP	%	95			75-125	Pass	
Copper (filtered)	M16-Ma23653	NCP	%	91			70-130	Pass	
Iron	M16-Ma23009	NCP	%	89			75-125	Pass	
Iron (filtered)	M16-Ma23653	NCP	%	85			70-130	Pass	
Lead	M16-Ma23009	NCP	%	113			75-125	Pass	
Lead (filtered)	M16-Ma23653	NCP	%	95			70-130	Pass	
Manganese	M16-Ma23009	NCP	%	93			75-125	Pass	
Manganese (filtered)	M16-Ma22628	NCP	%	77			70-130	Pass	
Mercury	M16-Ma23009	NCP	%	107			70-130	Pass	
Mercury (filtered)	M16-Ma23653	NCP	%	96			70-130	Pass	
Nickel	M16-Ma23009	NCP	%	90			75-125	Pass	
Nickel (filtered)	M16-Ma23653	NCP	%	93			70-130	Pass	
Selenium	M16-Ma23009	NCP	%	93			75-125	Pass	
Selenium (filtered)	M16-Ma23653	NCP	%	101			70-130	Pass	
Zinc	M16-Ma23009	NCP	%	93			75-125	Pass	
Zinc (filtered)	M16-Ma23653	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ma22583	NCP	%	102			70-130	Pass	
Magnesium	M16-Ma22583	NCP	%	98			70-130	Pass	
Potassium	M16-Ma21088	NCP	%	84			70-130	Pass	
Sodium	M16-Ma22583	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M16-Ma21709	CP	%	114			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S16-Ma20891	NCP	mg/L	0.95	0.98	3.0	30%	Pass	
Chloride	M16-Ma21708	CP	mg/L	450	460	1.2	30%	Pass	
Conductivity (at 25°C)	M16-Ma21708	CP	uS/cm	1800	1800	<1	30%	Pass	
Nitrate & Nitrite (as N)	S16-Ma20891	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	S16-Ma20891	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	S16-Ma20891	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M16-Ma21708	CP	pH Units	8.2	8.2	pass	30%	Pass	
Phosphate total (as P)	S16-Ma20888	NCP	mg/L	0.40	0.39	3.0	30%	Pass	
Phosphorus reactive (as P)	M16-Ma21708	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ma21708	CP	mg/L	8.1	8.6	7.2	30%	Pass	
Total Dissolved Solids	M16-Ma22673	NCP	mg/L	2600	2500	3.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ma20713	NCP	mg/L	2.0	1.2	47	30%	Fail	Q15
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ma21708	CP	mg/L	210	220	2.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ma21708	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ma21708	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Ma21708	CP	mg/L	210	220	2.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ma21708	CP	mg/L	0.68	0.66	3.0	30%	Pass
Aluminium (filtered)	M16-Ma21708	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Ma23653	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Ma20402	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Cadmium (filtered)	S16-Ma20434	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Ma23653	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Ma21708	CP	mg/L	0.001	< 0.001	98	30%	Fail Q15
Copper (filtered)	M16-Ma23653	NCP	mg/L	0.024	0.024	2.0	30%	Pass
Iron	M16-Ma23009	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	M16-Ma23653	NCP	mg/L	0.12	0.12	<1	30%	Pass
Lead	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Ma23653	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Ma23009	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Ma23653	NCP	mg/L	0.46	0.45	3.0	30%	Pass
Mercury	M16-Ma23009	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Ma23653	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-Ma23653	NCP	mg/L	0.016	0.015	5.0	30%	Pass
Selenium	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Ma23653	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Ma23009	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Ma23653	NCP	mg/L	0.067	0.065	2.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ma22583	NCP	mg/L	220	220	2.0	30%	Pass
Magnesium	M16-Ma22583	NCP	mg/L	7.3	7.3	1.0	30%	Pass
Potassium	M16-Ma22677	NCP	mg/L	10	11	8.0	30%	Pass
Sodium	M16-Ma22583	NCP	mg/L	46	45	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ma21710	CP	mg/L	19	20	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Ma23861	NCP	NTU	< 1	< 1	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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CERTIFICATE OF ANALYSIS

Work Order	: EP1517263	Page	: 1 of 3
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MR SHANE HEALEY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: shane_healey@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 93557100	Telephone	: 08 9209 7619
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT05363AA WP	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 2274	Date Samples Received	: 18-Dec-2015 17:00
C-O-C number	: ----	Date Analysis Commenced	: 24-Dec-2015
Sampler	: DANIEL MARSH	Issue Date	: 07-Jan-2016 12:15
Site	: ----		
Quote number	: ----	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC2	----	----	----	----
Client sampling date / time			[17-Dec-2015]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1517263-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	17.0	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	112	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	99.6	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	99.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	86.1	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EP1517263	Page	: 1 of 5
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MR SHANE HEALEY	Contact	: Mitchell Bevan
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: shane_healey@coffey.com	E-mail	: mitchell.bevan@alsglobal.com
Telephone	: +61 08 93557100	Telephone	: 08 9209 7619
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: ENAUPERT05363AA WP	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	: 2274	Date Samples Received	: 18-Dec-2015
C-O-C number	: ----	Date Analysis Commenced	: 24-Dec-2015
Sampler	: DANIEL MARSH	Issue Date	: 07-Jan-2016
Site	: ----	No. of samples received	: 1
Quote number	: ----	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 320218)									
EP1517263-001	QC2	EA055-103: Moisture Content (dried @ 103°C)	----	1	%	17.0	18.7	9.68	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 320354)									
EP1517263-001	QC2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 320355)									
EP1517263-001	QC2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 320536)									
EP1517142-008	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 320355)									
EP1517263-001	QC2	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 320536)									
EP1517142-008	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 320536)									
EP1517142-008	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 320354)									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	0.5 mg/kg	96.4	41	111	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 320355)									
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	1192 mg/kg	102	70	120	
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2699 mg/kg	99.0	69	117	
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	437 mg/kg	95.9	59	113	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 320536)									
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	32 mg/kg	86.5	66	122	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 320355)									
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1913 mg/kg	101	71	117	
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	2245 mg/kg	97.2	65	119	
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	151 mg/kg	93.0	42	124	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 320536)									
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	37 mg/kg	85.6	66	122	
EP080: BTEXN (QCLot: 320536)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	99.8	72	122	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	90.4	73	121	
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	98.0	74	122	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	2 mg/kg	87.2	64	126	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	100	75	121	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	95.9	75	119	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 320536)							
EP1517142-009	Anonymous	EP080: C6 - C9 Fraction	----	24 mg/kg	93.2	69	135
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 320536)							
EP1517142-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	29 mg/kg	86.3	69	135

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 Work Order : EP1517263
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT05363AA WP



Sub-Matrix: **SOIL**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EP080: BTEXN (QCLot: 320536)							
EP1517142-009	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	97.7	76	118
		EP080: Toluene	108-88-3	2 mg/kg	94.4	67	112

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1517263	Page	: 1 of 4
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MR SHANE HEALEY	Telephone	: 08 9209 7619
Project	: ENAUPERT05363AA WP	Date Samples Received	: 18-Dec-2015
Site	: ----	Issue Date	: 07-Jan-2016
Sampler	: DANIEL MARSH	No. of samples received	: 1
Order number	: 2274	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Polychlorinated Biphenyls (PCB)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055-103) QC2	17-Dec-2015	----	----	----	24-Dec-2015	31-Dec-2015	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066) QC2	17-Dec-2015	24-Dec-2015	31-Dec-2015	✓	24-Dec-2015	02-Feb-2016	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) QC2	17-Dec-2015	24-Dec-2015	31-Dec-2015	✓	24-Dec-2015	02-Feb-2016	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) QC2	17-Dec-2015	24-Dec-2015	31-Dec-2015	✓	24-Dec-2015	31-Dec-2015	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	1	100.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	1	100.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	1	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CERTIFICATE OF ANALYSIS

Work Order : **EP1602225**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : Monitoring Event 2
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 15-Mar-2016 15:10
Date Analysis Commenced : 15-Mar-2016
Issue Date : 22-Mar-2016 12:34



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC62	QC64	----	----	----
Client sampling date / time				[15-Mar-2016]	[15-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602225-001	EP1602225-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.05	7.26	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	595	337	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	436	224	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	1.3	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	107	25	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	107	25	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	45	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	64	58	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	59	6	----	----	----	
Magnesium	7439-95-4	1	mg/L	6	8	----	----	----	
Sodium	7440-23-5	1	mg/L	35	51	----	----	----	
Potassium	7440-09-7	1	mg/L	44	3	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.05	0.26	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	<0.001	0.002	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	0.10	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	18.4	0.28	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC62	QC64	----	----	----
Client sampling date / time				[15-Mar-2016]	[15-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602225-001	EP1602225-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.018	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.004	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.014	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.006	0.002	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.005	<0.001	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.008	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.14	0.11	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.01	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	15.4	0.03	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	15.4	0.03	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.4	0.6	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	20.8	0.6	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.18	0.02	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	<0.01	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC62	QC64	----	----	----
Client sampling date / time				[15-Mar-2016]	[15-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602225-001	EP1602225-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	5.86	3.07	----	----	----	
Total Cations	----	0.01	meq/L	6.08	3.25	----	----	----	
Ionic Balance	----	0.01	%	1.91	2.83	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	16	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	<1	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1602225	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 15-Mar-2016
Order number	: Monitoring Event 2	Date Analysis Commenced	: 15-Mar-2016
C-O-C number	: ----	Issue Date	: 22-Mar-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 396308)									
EP1602225-001	QC62	EA005-P: pH Value	----	0.01	pH Unit	7.05	7.06	0.142	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 396307)									
EP1602225-001	QC62	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	595	582	2.24	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 396300)									
EP1602225-001	QC62	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	436	435	0.00	0% - 20%
EA045: Turbidity (QC Lot: 398142)									
EP1602201-003	Anonymous	EA045: Turbidity	----	0.1	NTU	7.7	7.6	0.00	0% - 20%
EP1602237-006	Anonymous	EA045: Turbidity	----	0.1	NTU	2.5	2.4	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 396309)									
EP1602225-001	QC62	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	107	96	10.1	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	107	96	10.1	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 395371)									
EP1602225-001	QC62	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	41	4.98	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 395372)									
EP1602225-001	QC62	ED045G: Chloride	16887-00-6	1	mg/L	64	65	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 395832)									
EP1602225-001	QC62	ED093F: Calcium	7440-70-2	1	mg/L	59	58	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	44	45	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	35	35	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 398629)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 398629) - continued									
ES1605956-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.050	0.053	4.47	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.010	0.009	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.007	0.006	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.31	0.31	0.00	No Limit
ES1605830-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.030	0.031	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 396550)									
EP1602225-001	QC62	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.018	0.015	16.0	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.014	0.014	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.006	0.007	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.004	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.008	0.009	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	18.4	16.1	13.2	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.14	1.13	1.65	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 398630)									
EP1602225-002	QC64	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1605956-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 396553)									
EP1602225-001	QC62	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 397060)									
EP1602189-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1602194-007	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 398601)									
EP1602237-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1602276-004	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 397066)									
EP1602194-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1605774-010	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 395379)									
EP1602225-001	QC62	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 395373)									
EP1602225-001	QC62	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 395380)									
EP1602225-001	QC62	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	15.4	15.8	2.65	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 395825)									
EP1602225-001	QC62	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	5.4	4.4	20.3	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 395824)									
EP1602225-001	QC62	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.18	0.14	24.6	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 395374)									
EP1602225-001	QC62	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	0.04	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 396308)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 396307)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.7	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 396300)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.3	83	111	
				<10	293 mg/L	101	70	130	
EA045: Turbidity (QCLot: 398142)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 396309)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00	1	mg/L	<1	----	----	----	----	
	1								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	114	76	126	
				<1	200 mg/L	100.0	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 395371)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	98.7	89	113	
				<1	100 mg/L	86.2	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 395372)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	94.4	84	120	
				<1	1000 mg/L	99.7	84	110	
ED093F: Dissolved Major Cations (QCLot: 395832)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	93.3	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	93.4	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.4	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 398629)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	87.8	80	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.5	85	114	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.9	85	111	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	89.2	81	111	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	85.8	82	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.0	83	111	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 398629) - continued									
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	84.6	82	110	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.5	82	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	87.5	85	115	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.9	81	117	
EG020T: Total Metals by ICP-MS (QCLot: 396550)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.0	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.6	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.9	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.6	85	111	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.9	82	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.4	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	101	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.4	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.2	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.8	81	103	
EG035F: Dissolved Mercury by FIMS (QCLot: 398630)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	88.3	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 396553)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.7	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 397060)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	106	87	111	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 398601)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.9	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 397066)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	99.8	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 395379)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	112	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 395373)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 395380)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 395825)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.8	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 395824)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.8	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 395374)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 395371)							
EP1602225-001	QC62	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	112	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 395372)							
EP1602225-001	QC62	ED045G: Chloride	16887-00-6	1000 mg/L	98.1	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 398629)							
EP1602225-002	QC64	EG020A-F: Arsenic	7440-38-2	1 mg/L	93.7	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	91.1	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	90.8	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	106	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	88.8	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	92.1	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	95.1	70	130
EG020T: Total Metals by ICP-MS (QCLot: 396550)							
EP1602225-002	QC64	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.8	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.7	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	101	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	101	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	105	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 398630)							
EP1602225-001	QC62	EG035F: Mercury	7439-97-6	0.01 mg/L	88.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 396553)							
EP1602225-002	QC64	EG035T: Mercury	7439-97-6	0.01 mg/L	97.1	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 397060)							
EP1602189-002	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	102	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 398601)							
EP1602225-001	QC62	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	116	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 397066)							
EP1602194-002	Anonymous	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 395379)							
EP1602225-002	QC64	EK055G: Ammonia as N	7664-41-7	1 mg/L	107	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK057G: Nitrite as N by Discrete Analyser (QCLot: 395373)							
EP1602225-002	QC64	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	120	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 395380)							
EP1602225-002	QC64	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	105	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 395825)							
EP1602225-001	QC62	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.5	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 395824)							
EP1602225-001	QC62	EK067G: Total Phosphorus as P	----	1 mg/L	93.7	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 395374)							
EP1602225-002	QC64	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	118	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1602225	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 15-Mar-2016
Site	: ----	Issue Date	: 22-Mar-2016
Sampler	: ----	No. of samples received	: 2
Order number	: Monitoring Event 2	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural	QC62, QC64	----	----	----	16-Mar-2016	15-Mar-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)	15-Mar-2016	QC62, QC64	----	----	----	16-Mar-2016	15-Mar-2016	✖
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P)	15-Mar-2016	QC62, QC64	----	----	----	16-Mar-2016	12-Apr-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)	15-Mar-2016	QC62, QC64	----	----	----	16-Mar-2016	22-Mar-2016	✔
EA045: Turbidity								
Clear Plastic Bottle - Natural (EA045)	15-Mar-2016	QC64	----	----	----	17-Mar-2016	17-Mar-2016	✔
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)	15-Mar-2016	QC62, QC64	----	----	----	16-Mar-2016	29-Mar-2016	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)	15-Mar-2016	QC62, QC64	----	----	----	15-Mar-2016	12-Apr-2016	✔
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)	15-Mar-2016	QC62, QC64	----	----	----	15-Mar-2016	12-Apr-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) QC62, QC64	15-Mar-2016	----	----	----	16-Mar-2016	22-Mar-2016	✓	
EG020F: Dissolved Metals by ICP-MS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F) QC62, QC64	15-Mar-2016	----	----	----	18-Mar-2016	11-Sep-2016	✓	
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC62, QC64	15-Mar-2016	17-Mar-2016	11-Sep-2016	✓	17-Mar-2016	11-Sep-2016	✓	
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC62, QC64	15-Mar-2016	----	----	----	22-Mar-2016	12-Apr-2016	✓	
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC62, QC64	15-Mar-2016	----	----	----	17-Mar-2016	12-Apr-2016	✓	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC64	15-Mar-2016	----	----	----	17-Mar-2016	11-Sep-2016	✓	
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC62	15-Mar-2016	----	----	----	18-Mar-2016	11-Sep-2016	✓	
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG094A-T) QC62, QC64	15-Mar-2016	17-Mar-2016	11-Sep-2016	✓	17-Mar-2016	11-Sep-2016	✓	
EK055G: Ammonia as N by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK055G) QC62, QC64	15-Mar-2016	----	----	----	15-Mar-2016	12-Apr-2016	✓	
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC62, QC64	15-Mar-2016	----	----	----	15-Mar-2016	17-Mar-2016	✓	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK059G) QC62, QC64	15-Mar-2016	----	----	----	15-Mar-2016	12-Apr-2016	✓	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK061G) QC62, QC64	15-Mar-2016	16-Mar-2016	12-Apr-2016	✓	17-Mar-2016	12-Apr-2016	✓	
EK067G: Total Phosphorus as P by Discrete Analyser								
Amber Glass Bottle - Sulfuric Acid (EK067G) QC62, QC64	15-Mar-2016	16-Mar-2016	12-Apr-2016	✓	17-Mar-2016	12-Apr-2016	✓	
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC62, QC64	15-Mar-2016	----	----	----	15-Mar-2016	17-Mar-2016	✓	

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 Work Order : EP1602225
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC64	15-Mar-2016	----	----	----	15-Mar-2016	16-Mar-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	4	28	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1602288**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 16-Mar-2016 16:10
Date Analysis Commenced : 17-Mar-2016
Issue Date : 23-Mar-2016 14:17



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- EG035: Poor matrix spike recovery was obtained for Mercury on sample EP1602288-1 due to high matrix interference. Confirmed by re-analysis.
- Metals analysis: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC68	----	----	----	----
Client sampling date / time		[16-Mar-2016]		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1602288-001	-----	-----	-----	-----
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.11	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	4530	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2910	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	52	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	52	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	85	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	1310	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	13	----	----	----	----
Magnesium	7439-95-4	1	mg/L	88	----	----	----	----
Sodium	7440-23-5	1	mg/L	739	----	----	----	----
Potassium	7440-09-7	1	mg/L	29	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.12	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.131	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.71	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.16	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC68	----	----	----	----
Client sampling date / time				[16-Mar-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602288-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Copper	7440-50-8	0.001	mg/L	0.002	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.128	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.011	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	1.25	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.9	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.04	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	39.8	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC68	----	----	----	----
Client sampling date / time				[16-Mar-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602288-001	-----	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	40.8	----	----	----	----	
Ionic Balance	----	0.01	%	1.24	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	<1	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	<1	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1602288	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 16-Mar-2016
Order number	: ----	Date Analysis Commenced	: 17-Mar-2016
C-O-C number	: ----	Issue Date	: 23-Mar-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 398140)									
EP1602288-001	QC68	EA005-P: pH Value	----	0.01	pH Unit	7.11	7.15	0.561	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 398139)									
EP1602284-010	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	166000	169000	1.33	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 401026)									
EP1602308-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	656	674	2.56	0% - 20%
EP1602286-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	384	384	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 398138)									
EP1602286-004	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	157	140	11.1	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	157	139	12.0	0% - 20%
EP1602284-010	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	137	140	2.09	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	137	139	1.43	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 398265)									
EP1602313-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	883	923	4.39	0% - 20%
EP1602286-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	40	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 398266)									
EP1602313-002	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2190	2190	0.00	0% - 20%
EP1602286-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	112	113	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 398100)									
EP1602286-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	48	48	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	9	9	0.00	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 398100) - continued									
EP1602286-001	Anonymous	ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	65	65	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 401847)									
ES1605762-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.011	0.012	0.00	0% - 50%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.027	0.026	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.002	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.013	0.012	8.83	0% - 50%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.040	0.043	5.03	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.09	0.08	16.8	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.11	0.08	24.6	No Limit
ES1606003-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.433	0.425	1.93	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	7.86	7.95	1.11	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	4.56	4.32	5.40	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 400329)									
EP1602288-001	QC68	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.128	0.133	3.61	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.011	<0.005	68.5	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.16	0.13	19.0	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.25	1.26	0.00	0% - 20%
ES1606003-003	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	<0.001	0.00	No Limit
ES1606003-003	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	1.54	1.54	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	82.9	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 400329) - continued									
ES1606003-003	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.067	0.049	31.4	0% - 50%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.04	0.03	49.2	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	11.2	11.2	0.260	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 401848)									
ES1605714-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1606003-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 400655)									
EP1602288-001	QC68	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1605968-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 400294)									
EP1602276-005	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1602313-007	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 400316)									
EP1602278-002	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 398041)									
EP1602286-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 398267)									
EP1602313-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit
EP1602286-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 398042)									
EP1602286-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.38	0.39	0.00	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 397907)									
EP1602288-001	QC68	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	1.0	11.4	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 397906)									
EP1602288-001	QC68	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.05	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 398268)									
EP1602313-004	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit
EP1602286-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 398140)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 398139)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.0	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 401026)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	83	111	
				<10	293 mg/L	111	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 398138)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	100	76	126	
				<1	200 mg/L	96.2	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 398265)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	89	113	
				<1	100 mg/L	89.3	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 398266)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	109	84	120	
				<1	1000 mg/L	103	84	110	
ED093F: Dissolved Major Cations (QCLot: 398100)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.7	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	93.0	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.0	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.5	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 401847)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.5	80	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	85	114	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.2	85	111	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.4	81	111	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.2	82	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.9	83	111	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.7	82	110	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.0	82	112	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 401847) - continued								
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.8	85	115
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.1	81	117
EG020T: Total Metals by ICP-MS (QCLot: 400329)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.6	82	120
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.3	86	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.5	83	118
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	94.2	85	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.4	85	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	95.2	85	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.5	84	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.2	68	126
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.3	79	117
EG035F: Dissolved Mercury by FIMS (QCLot: 401848)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.0	83	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 400655)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.5	77	111
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 400294)								
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	94.5	87	111
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 400316)								
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	92.6	85	113
EK055G: Ammonia as N by Discrete Analyser (QCLot: 398041)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	109	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 398267)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.7	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 398042)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 397907)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	85.0	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 397906)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	82.2	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 398268)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	87	115

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
					Low	High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 398265)							
EP1602286-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	84.2	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 398266)							
EP1602286-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	99.5	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 401847)							
ES1605714-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	104	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	94.6	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	101	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	95.0	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	95.3	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	98.9	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	102	70	130
EG020T: Total Metals by ICP-MS (QCLot: 400329)							
ES1605923-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	100	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	98.1	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	98.2	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	97.4	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	97.5	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.8	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	91.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 401848)							
EP1602288-001	QC68	EG035F: Mercury	7439-97-6	0.01 mg/L	# 56.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 400655)							
ES1605961-006	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	91.9	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 400294)							
EP1602288-001	QC68	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	90.1	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 400316)							
EP1602278-003	Anonymous	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	95.9	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 398041)							
EP1602286-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	111	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 398267)							
EP1602286-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	122	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 398042)							
EP1602286-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	108	70	130

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 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 397907)							
EP1602288-001	QC68	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 397906)							
EP1602288-001	QC68	EK067G: Total Phosphorus as P	----	1 mg/L	91.0	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 398268)							
EP1602286-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	120	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1602288	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 16-Mar-2016
Site	: ----	Issue Date	: 23-Mar-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035F: Dissolved Mercury by FIMS	EP1602288--001	QC68	Mercury	7439-97-6	56.1 %	70-130%	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC68	----	----	----	17-Mar-2016	16-Mar-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC68	16-Mar-2016	----	----	----	17-Mar-2016	16-Mar-2016	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC68	16-Mar-2016	---	----	----	17-Mar-2016	13-Apr-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC68	16-Mar-2016	----	----	----	21-Mar-2016	23-Mar-2016	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC68	16-Mar-2016	----	----	----	17-Mar-2016	30-Mar-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	13-Apr-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	13-Apr-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC68	16-Mar-2016	----	----	----	18-Mar-2016	23-Mar-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F) QC68	16-Mar-2016	----	----	----	22-Mar-2016	12-Sep-2016	✓
EG020T: Total Metals by ICP-MS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020A-T) QC68	16-Mar-2016	21-Mar-2016	12-Sep-2016	✓	21-Mar-2016	12-Sep-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC68	16-Mar-2016	----	----	----	23-Mar-2016	13-Apr-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) QC68	16-Mar-2016	----	----	----	22-Mar-2016	13-Apr-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC68	16-Mar-2016	----	----	----	21-Mar-2016	12-Sep-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC68	16-Mar-2016	21-Mar-2016	12-Sep-2016	✓	21-Mar-2016	12-Sep-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	13-Apr-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	18-Mar-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	13-Apr-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC68	16-Mar-2016	18-Mar-2016	13-Apr-2016	✓	21-Mar-2016	13-Apr-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC68	16-Mar-2016	18-Mar-2016	13-Apr-2016	✓	21-Mar-2016	13-Apr-2016	✓

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 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method <i>Container / Client Sample ID(s)</i>	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC68	16-Mar-2016	----	----	----	17-Mar-2016	18-Mar-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Miscellaneous Plastic bottle -unpreserved (MW006) QC68	16-Mar-2016	----	----	----	17-Mar-2016	17-Mar-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaural	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	19	15.79	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1602494**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 22-Mar-2016 16:50
Date Analysis Commenced : 23-Mar-2016
Issue Date : 30-Mar-2016 21:45



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.

- Ultra-trace Cadmium conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC79	QC80	----	----	----
Client sampling date / time				[22-Mar-2016]	[22-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602494-001	EP1602494-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.65	8.00	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	1700	2250	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1280	1970	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	196	198	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	196	198	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	21	36	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	494	706	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	64	70	----	----	----	
Magnesium	7439-95-4	1	mg/L	38	46	----	----	----	
Sodium	7440-23-5	1	mg/L	213	305	----	----	----	
Potassium	7440-09-7	1	mg/L	6	6	----	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.004	0.072	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----	
Iron	7439-89-6	0.05	mg/L	<0.05	0.05	----	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	12.6	16.8	----	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.036	0.011	----	----	----	
Chromium	7440-47-3	0.001	mg/L	0.024	0.038	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC79	QC80	----	----	----
Client sampling date / time				[22-Mar-2016]	[22-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602494-001	EP1602494-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Copper	7440-50-8	0.001	mg/L	0.004	0.007	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.025	0.026	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.012	0.099	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.032	0.025	----	----	----	
Selenium	7782-49-2	0.01	mg/L	0.01	0.02	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.006	0.024	----	----	----	
Iron	7439-89-6	0.05	mg/L	55.3	10.5	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	0.05	0.08	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.23	0.18	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.02	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.02	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.7	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	0.7	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.09	0.15	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.06	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	18.3	24.6	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC79	QC80	----	----	----
Client sampling date / time				[22-Mar-2016]	[22-Mar-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1602494-001	EP1602494-002	-----	-----	-----	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L	15.7	20.7	----	----	----	
Ionic Balance	----	0.01	%	7.49	8.66	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1602494	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Mar-2016
Order number	: ----	Date Analysis Commenced	: 23-Mar-2016
C-O-C number	: ----	Issue Date	: 30-Mar-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 404662)									
EP1602495-008	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.72	4.76	0.844	0% - 20%
EP1602494-002	QC80	EA005-P: pH Value	----	0.01	pH Unit	8.00	8.06	0.747	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 404661)									
EP1602495-008	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	77400	77100	0.343	0% - 20%
EP1602489-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	795	770	3.23	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 405829)									
EP1602494-002	QC80	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1970	2050	4.33	0% - 20%
EP1602489-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	348	350	0.860	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 404660)									
EP1602473-004	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	236	237	0.592	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	236	237	0.592	0% - 20%
EP1602489-007	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	52	50	2.24	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	52	50	2.24	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 404663)									
EP1602494-002	QC80	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	198	197	0.00	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	198	197	0.00	0% - 20%
EP1602498-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	394	388	1.53	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	122	128	5.11	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 404663) - continued									
EP1602498-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	516	516	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 404775)									
EP1602494-001	QC79	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	21	21	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 404774)									
EP1602494-001	QC79	ED045G: Chloride	16887-00-6	1	mg/L	494	494	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 405103)									
EP1602494-001	QC79	ED093F: Calcium	7440-70-2	1	mg/L	64	65	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	38	37	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	213	211	1.25	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 405105)									
EP1602544-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.043	0.041	4.95	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EP1602494-001	QC79	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 405121)									
EP1602494-001	QC79	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.036	0.037	4.21	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.024	0.023	5.63	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.025	0.026	0.00	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.032	0.033	0.00	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 405121) - continued									
EP1602494-001	QC79	EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	12.6	11.9	5.65	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.01	0.02	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	55.3	54.1	2.19	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 405104)									
EP1602494-001	QC79	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 405125)									
EP1602494-001	QC79	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 406673)									
EP1602489-003	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1602453-002	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 406451)									
EP1602455-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.00131	1.29	1.95	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 404605)									
EP1602488-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.04	0.00	No Limit
EP1602512-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.15	3.26	3.43	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 404776)									
EP1602494-001	QC79	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 404604)									
EP1602488-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.03	0.00	No Limit
EP1602512-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.00	0.98	1.47	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 405243)									
EP1602494-001	QC79	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.6	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 405244)									
EP1602494-001	QC79	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.09	0.07	24.5	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 404777)									
EP1602494-001	QC79	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.06	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 404662)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 404661)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	100	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 405829)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	83	111	
				<10	293 mg/L	116	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 404660)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	94.6	76	126	
				<1	200 mg/L	95.2	90	106	
ED037P: Alkalinity by PC Titrator (QCLot: 404663)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	105	76	126	
				<1	200 mg/L	94.1	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 404775)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	104	89	113	
				<1	100 mg/L	100	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 404774)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	103	84	120	
				<1	1000 mg/L	104	84	110	
ED093F: Dissolved Major Cations (QCLot: 405103)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.6	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	97.9	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.0	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.2	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 405105)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	97.8	84	116	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 405105) - continued									
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	101	84	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.5	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.7	84	110	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.7	84	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.9	85	107	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	85	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.4	84	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	88	112	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.4	89	115	
EG020T: Total Metals by ICP-MS (QCLot: 405121)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	94.1	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.8	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.6	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	87.5	85	111	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	92.3	82	112	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.2	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.6	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.5	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	85.4	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	87.8	81	103	
EG035F: Dissolved Mercury by FIMS (QCLot: 405104)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	97.1	92	116	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 405125)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.0	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 406673)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.6	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 406451)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	92.8	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 404605)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	99.7	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 404776)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 404604)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 405243)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	90.5	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 405244)									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 405244) - continued								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	82.0	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 404777)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	94.0	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 404775)							
EP1602494-002	QC80	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	98.2	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 404774)							
EP1602494-002	QC80	ED045G: Chloride	16887-00-6	1000 mg/L	74.0	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 405105)							
EP1602534-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	95.2	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	93.9	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	91.3	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	97.6	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.0	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	96.8	70	130
EG020T: Total Metals by ICP-MS (QCLot: 405121)							
EP1602494-002	QC80	EG020A-T: Arsenic	7440-38-2	1 mg/L	93.2	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.1	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	95.5	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	91.3	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	95.7	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	96.2	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.1	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 405104)							
EP1602494-002	QC80	EG035F: Mercury	7439-97-6	0.01 mg/L	97.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 405125)							
EP1602494-002	QC80	EG035T: Mercury	7439-97-6	0.01 mg/L	92.2	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 406673)							
EP1602453-001	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	93.8	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 406451)							
EP1602494-001	QC79	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	94.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 404605)							
EP1602488-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.0	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 404776)							
EP1602544-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	113	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 404604)							
EP1602488-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 405243)							
EP1602494-001	QC79	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	77.3	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 405244)							
EP1602494-001	QC79	EK067G: Total Phosphorus as P	----	1 mg/L	75.9	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 404777)							
EP1602544-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	119	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1602494	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Mar-2016
Site	: ----	Issue Date	: 30-Mar-2016
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC79, QC80	----	----	----	23-Mar-2016	22-Mar-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	22-Mar-2016	✖
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	19-Apr-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC79, QC80	22-Mar-2016	----	----	----	24-Mar-2016	29-Mar-2016	✔
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	05-Apr-2016	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	19-Apr-2016	✔
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	19-Apr-2016	✔
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC79, QC80	22-Mar-2016	----	----	----	24-Mar-2016	19-Apr-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC79, QC80	22-Mar-2016	----	----	----	24-Mar-2016	18-Sep-2016	✓
EG020T: Total Metals by ICP-MS							
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC79, QC80	22-Mar-2016	24-Mar-2016	18-Sep-2016	✓	24-Mar-2016	18-Sep-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC79, QC80	22-Mar-2016	----	----	----	24-Mar-2016	19-Apr-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Miscellaneous Nitric preserved - unfiltered (EG035T) QC79, QC80	22-Mar-2016	----	----	----	24-Mar-2016	19-Apr-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC79, QC80	22-Mar-2016	----	----	----	29-Mar-2016	18-Sep-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Miscellaneous Nitric preserved - unfiltered (EG094A-T) QC79, QC80	22-Mar-2016	29-Mar-2016	18-Sep-2016	✓	29-Mar-2016	18-Sep-2016	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	19-Apr-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	24-Mar-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	19-Apr-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC79, QC80	22-Mar-2016	24-Mar-2016	19-Apr-2016	✓	29-Mar-2016	19-Apr-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC79, QC80	22-Mar-2016	24-Mar-2016	19-Apr-2016	✓	29-Mar-2016	19-Apr-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC79, QC80	22-Mar-2016	----	----	----	23-Mar-2016	24-Mar-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	2	34	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1603258	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 13-Apr-2016
Site	: ----	Issue Date	: 20-Apr-2016
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved	QC89, QC91	---	---	---	14-Apr-2016	13-Apr-2016	1
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulfuric Preserved - glass	QC89, QC91	15-Apr-2016	14-Apr-2016	1	---	---	---
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulfuric Preserved - glass	QC89, QC91	15-Apr-2016	14-Apr-2016	1	---	---	---

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P)	13-Apr-2016	QC89, QC91	---	---	---	14-Apr-2016	13-Apr-2016	✘
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P)	13-Apr-2016	QC89, QC91	---	---	---	14-Apr-2016	11-May-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H)	13-Apr-2016	QC89, QC91	---	---	---	14-Apr-2016	20-Apr-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC89, QC91	QC90,	13-Apr-2016	----	----	----	14-Apr-2016	27-Apr-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	11-May-2016	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	11-May-2016	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC89, QC91	QC90,	13-Apr-2016	----	----	----	14-Apr-2016	20-Apr-2016	✓
EG020F: Dissolved Metals by ICP-MS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F) QC89, QC91	QC90,	13-Apr-2016	----	----	----	18-Apr-2016	10-Oct-2016	✓
EG020T: Total Metals by ICP-MS								
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC89, QC91	QC90,	13-Apr-2016	18-Apr-2016	10-Oct-2016	✓	18-Apr-2016	10-Oct-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC89, QC91	QC90,	13-Apr-2016	----	----	----	18-Apr-2016	11-May-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Miscellaneous Nitric preserved - unfiltered (EG035T) QC89, QC91	QC90,	13-Apr-2016	----	----	----	18-Apr-2016	11-May-2016	✓
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG093A-F) QC89, QC91	QC90,	13-Apr-2016	----	----	----	18-Apr-2016	10-Oct-2016	✓
EG093T: Total Metals in Saline Water by ORC-ICPMS								
Miscellaneous Nitric preserved - unfiltered (EG093A-T) QC89, QC91	QC90,	13-Apr-2016	18-Apr-2016	10-Oct-2016	✓	18-Apr-2016	10-Oct-2016	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulfuric Preserved - glass (EK055G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	14-Apr-2016	✔
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	15-Apr-2016	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulfuric Preserved - glass (EK059G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	14-Apr-2016	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulfuric Preserved - glass (EK061G) QC89, QC91	QC90,	13-Apr-2016	15-Apr-2016	14-Apr-2016	✖	19-Apr-2016	13-May-2016	✔
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulfuric Preserved - glass (EK067G) QC89, QC91	QC90,	13-Apr-2016	15-Apr-2016	14-Apr-2016	✖	19-Apr-2016	13-May-2016	✔
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC89, QC91	QC90,	13-Apr-2016	----	----	----	13-Apr-2016	15-Apr-2016	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Saline Water -Suite A by ORC-ICPMS	EG093A-F	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	3	33.33	9.52	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Saline Water -Suite A by ORC-ICPMS	EG093A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	3	33.33	4.76	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Saline Water -Suite A by ORC-ICPMS	EG093A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	3	33.33	4.76	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Saline Water -Suite A by ORC-ICPMS	EG093A-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	1	3	33.33	4.76	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Saline Water -Suite A by ORC-ICPMS	EG093A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Saline Water Suite A by ORC-ICPMS	EG093A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>			
<i>Method</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **BASELINE GW_SW MONITORING - MONITORING EVENT 5**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 12, 2016 8:21 AM**
Eurofins | mgt reference: **496321**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **496321-W**
 Project name **BASELINE GW_SW MONITORING - MONITORING EVENT 5**
 Project ID **ENAUPERT04483AA**
 Received Date **Apr 12, 2016**

Client Sample ID			MW10 Water	MW1 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Ap09666	M16-Ap09667	M16-Ap09668	M16-Ap09669
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	24	< 10	22	22
Chloride	1	mg/L	34	89	44	14
Conductivity (at 25°C)	1	uS/cm	200	700	220	230
pH	0.1	pH Units	7.1	7.9	6.8	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.40
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	12	8.0	5.9
Total Dissolved Solids	10	mg/L	^{Q19} 150	430	120	^{Q19} 180
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	48	110	< 20	86
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.90	< 0.01	0.22	1.4
Nitrate (as N)	0.02	mg/L	0.27	15	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.05	0.04	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.1	1.8	0.7	2.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.0	1.8	0.9	3.7
Total Nitrogen (as N)	0.2	mg/L	3.3	17	0.9	3.7
Heavy Metals						
Aluminium	0.05	mg/L	6.3	4.3	13	0.44
Aluminium (filtered)	0.05	mg/L	0.37	< 0.05	0.13	0.09
Arsenic	0.001	mg/L	0.006	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.012	0.006	0.011	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.005	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	35	0.65	0.86	0.09
Iron (filtered)	0.05	mg/L	3.5	< 0.05	0.10	< 0.05
Lead	0.001	mg/L	0.005	0.004	0.017	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.017	< 0.005	0.021	< 0.005

Client Sample ID			MW10 Water	MW1 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Ap09666	M16-Ap09667	M16-Ap09668	M16-Ap09669
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.015	< 0.005	0.018	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.002	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.004	0.010	0.007
Zinc (filtered)	0.001	mg/L	0.003	< 0.001	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	19	58	7.3	34
Magnesium	0.5	mg/L	4.0	7.8	9.2	2.9
Potassium	0.5	mg/L	1.6	37	1.1	1.5
Sodium	0.5	mg/L	12	36	16	9.6

Client Sample ID			MW4 Water	MW5 Water	MW6 Water	MW7 Water
Sample Matrix			M16-Ap09670	M16-Ap09671	M16-Ap09672	M16-Ap09673
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	40	39	15
Chloride	1	mg/L	14	40	22	10
Conductivity (at 25°C)	1	uS/cm	130	190	180	110
pH	0.1	pH Units	7.2	5.2	6.1	4.6
Phosphate total (as P)	0.05	mg/L	0.15	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.13	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	13	8.7
Total Dissolved Solids	10	mg/L	76	130	120	71
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	39	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.0	0.86	0.68	0.07
Nitrate (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	1.1
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.2	1.0	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	2.1	1.7	0.6
Total Nitrogen (as N)	0.2	mg/L	1.4	2.1	1.7	1.7
Heavy Metals						
Aluminium	0.05	mg/L	0.99	20	29	6.2
Aluminium (filtered)	0.05	mg/L	< 0.05	1.2	0.36	0.53
Arsenic	0.001	mg/L	< 0.001	0.002	0.003	0.010
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.013	0.022	0.009

Client Sample ID			MW4 Water	MW5 Water	MW6 Water	MW7 Water
Sample Matrix			M16-Ap09670	M16-Ap09671	M16-Ap09672	M16-Ap09673
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.006	0.008	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.08	0.59	1.8	3.1
Iron (filtered)	0.05	mg/L	< 0.05	0.20	0.09	0.22
Lead	0.001	mg/L	0.004	0.013	0.034	0.009
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	0.0002	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.004	0.006	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.008	0.010	0.014
Zinc (filtered)	0.001	mg/L	0.001	0.003	0.003	0.014
Alkali Metals						
Calcium	0.5	mg/L	16	1.0	2.5	7.9
Magnesium	0.5	mg/L	1.6	4.2	7.0	2.1
Potassium	0.5	mg/L	< 0.5	0.7	3.2	2.2
Sodium	0.5	mg/L	5.6	22	20	8.1

Client Sample ID			MW8 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-Ap09674	M16-Ap09675	M16-Ap09676	M16-Ap09677
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	16	< 10	< 10	< 10
Chloride	1	mg/L	10	81	69	69
Conductivity (at 25°C)	1	uS/cm	99	450	380	330
pH	0.1	pH Units	5.8	7.4	7.4	7.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	14	13	13
Total Dissolved Solids	10	mg/L	64	230	190	200
Turbidity	1	NTU	-	3.5	1.6	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	45	26	26
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.07	0.02	0.02
Nitrate (as N)	0.02	mg/L	2.9	0.07	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.8	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.9	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	3.5	1.0	0.4	0.4

Client Sample ID			MW8 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-Ap09674	M16-Ap09675	M16-Ap09676	M16-Ap09677
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	6.8	< 0.05	0.26	0.24
Aluminium (filtered)	0.05	mg/L	0.26	< 0.05	0.18	0.16
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.012	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.18	0.24	0.11	0.11
Iron (filtered)	0.05	mg/L	< 0.05	0.08	0.09	0.11
Lead	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.019	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.016	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.018	0.005	0.004
Zinc (filtered)	0.001	mg/L	0.002	0.017	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	8.2	15	6.2	6.0
Magnesium	0.5	mg/L	1.1	10	8.2	8.0
Potassium	0.5	mg/L	< 0.5	4.4	2.1	2.1
Sodium	0.5	mg/L	7.7	50	51	50
Pathogens						
E.coli	1	MPN/100mL	-	350	130	49
Thermotolerant Coliforms	1	MPN/100mL	-	1600	540	540

Client Sample ID			SWL2-3 Water	SWL3-1 Water	SWL3-2 Water	SWL3-3 Water
Sample Matrix			M16-Ap09678	M16-Ap09679	M16-Ap09680	M16-Ap09681
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	70	68	68	69
Conductivity (at 25°C)	1	uS/cm	380	410	420	410
pH	0.1	pH Units	7.4	7.9	7.9	7.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	13	8.7	8.3	8.1
Total Dissolved Solids	10	mg/L	210	240	240	240
Turbidity	1	NTU	2.1	5.0	2.9	4.5

Client Sample ID			SWL2-3	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap09678	M16-Ap09679	M16-Ap09680	M16-Ap09681
Date Sampled			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	26	72	72	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.02	0.01	0.02
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	0.6	0.8	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.6	0.8	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.7	0.6	0.8	< 0.2
Heavy Metals						
Aluminium	0.05	mg/L	0.26	0.39	0.39	0.43
Aluminium (filtered)	0.05	mg/L	0.26	0.36	0.28	0.35
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.25	0.23	0.25
Iron (filtered)	0.05	mg/L	0.09	0.19	0.19	0.21
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.003	0.002	0.003
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	6.3	15	15	15
Magnesium	0.5	mg/L	8.2	8.6	8.7	8.5
Potassium	0.5	mg/L	2.0	2.0	2.1	2.0
Sodium	0.5	mg/L	51	49	48	48
Pathogens						
E.coli	1	MPN/100mL	130	79	13	26
Thermotolerant Coliforms	1	MPN/100mL	920	540	170	920

Client Sample ID			MW55 Water	QC81 Water	QC82 Water	QC83 Water
Sample Matrix			M16-Ap09682	M16-Ap09683	M16-Ap09684	M16-Ap09685
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	-
TRH C10-C14	0.05	mg/L	0.10	-	-	-
TRH C15-C28	0.1	mg/L	0.4	-	-	-
TRH C29-C36	0.1	mg/L	0.1	-	-	-
TRH C10-36 (Total)	0.1	mg/L	0.6	-	-	-
BTEX						
Benzene	0.001	mg/L	0.003	-	-	-
Toluene	0.001	mg/L	< 0.001	-	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-	-
Xylenes - Total	0.003	mg/L	< 0.003	-	-	-
4-Bromofluorobenzene (surr.)	1	%	100	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	-	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	0.08	-	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.0001	mg/L	< 0.0001	-	-	-
4,4'-DDD	0.00001	mg/L	< 0.00001	-	-	-
4,4'-DDE	0.00001	mg/L	< 0.00001	-	-	-
4,4'-DDT	0.00001	mg/L	< 0.00001	-	-	-
a-BHC	0.00001	mg/L	< 0.00001	-	-	-
Aldrin	0.00001	mg/L	< 0.00001	-	-	-
b-BHC	0.00001	mg/L	< 0.00001	-	-	-
d-BHC	0.00001	mg/L	< 0.00001	-	-	-
Dieldrin	0.00001	mg/L	< 0.00001	-	-	-
Endosulfan I	0.00001	mg/L	< 0.00001	-	-	-
Endosulfan II	0.00001	mg/L	< 0.00001	-	-	-
Endosulfan sulphate	0.00001	mg/L	< 0.00001	-	-	-
Endrin	0.00001	mg/L	< 0.00001	-	-	-
Endrin aldehyde	0.00001	mg/L	< 0.00001	-	-	-
Endrin ketone	0.00001	mg/L	< 0.00001	-	-	-
g-BHC (Lindane)	0.00001	mg/L	< 0.00001	-	-	-
Heptachlor	0.00001	mg/L	< 0.00001	-	-	-
Heptachlor epoxide	0.00001	mg/L	< 0.00001	-	-	-
Hexachlorobenzene	0.00001	mg/L	< 0.00001	-	-	-
Methoxychlor	0.00001	mg/L	< 0.00001	-	-	-
Toxaphene	0.0001	mg/L	< 0.0001	-	-	-
Dibutylchlorendate (surr.)	1	%	51	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	57	-	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.0001	mg/L	< 0.0005	-	-	-
Bolstar	0.0001	mg/L	< 0.0005	-	-	-
Chlorpyrifos	0.0001	mg/L	< 0.0005	-	-	-
Demeton-O	0.0001	mg/L	< 0.0005	-	-	-
Diazinon	0.0001	mg/L	< 0.0005	-	-	-
Dichlorvos	0.0001	mg/L	< 0.0005	-	-	-

Client Sample ID			MW55	QC81	QC82	QC83
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap09682	M16-Ap09683	M16-Ap09684	M16-Ap09685
Date Sampled			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Disulfoton	0.0001	mg/L	< 0.0005	-	-	-
Ethion	0.0001	mg/L	< 0.0005	-	-	-
Ethoprop	0.0001	mg/L	< 0.0005	-	-	-
Fenitrothion	0.0001	mg/L	< 0.0005	-	-	-
Fensulfothion	0.0001	mg/L	< 0.0005	-	-	-
Fenthion	0.0001	mg/L	< 0.0005	-	-	-
Merphos	0.0001	mg/L	< 0.0005	-	-	-
Methyl parathion	0.0001	mg/L	< 0.0005	-	-	-
Mevinphos	0.0001	mg/L	< 0.0005	-	-	-
Naled	0.0001	mg/L	< 0.0005	-	-	-
Phorate	0.0001	mg/L	< 0.0005	-	-	-
Ronnel	0.0001	mg/L	< 0.0005	-	-	-
Tokuthion	0.0001	mg/L	< 0.0005	-	-	-
Trichloronate	0.0001	mg/L	< 0.0005	-	-	-
Triphenylphosphate (surr.)	1	%	92	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	0.08	-	-	-
TRH >C16-C34	0.1	mg/L	0.5	-	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	< 0.03	-	-	-
1-Chloronaphthalene	0.005	mg/L	< 0.005	-	-	-
1-Naphthylamine	0.005	mg/L	< 0.005	-	-	-
1,2-Dichlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,2,3-Trichlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,2,4-Trichlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,3-Dichlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,3,5-Trichlorobenzene	0.005	mg/L	< 0.005	-	-	-
1,4-Dichlorobenzene	0.005	mg/L	< 0.005	-	-	-
2-Chloronaphthalene	0.005	mg/L	< 0.005	-	-	-
2-Chlorophenol	0.003	mg/L	< 0.003	-	-	-
2-Methylnaphthalene	0.005	mg/L	< 0.005	-	-	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	-	-	-
2-Naphthylamine	0.005	mg/L	< 0.005	-	-	-
2-Nitroaniline	0.005	mg/L	< 0.005	-	-	-
2-Nitrophenol	0.01	mg/L	< 0.01	-	-	-
2-Picoline	0.005	mg/L	< 0.005	-	-	-
2,3,4,6-Tetrachlorophenol	0.01	mg/L	< 0.01	-	-	-
2,4-Dichlorophenol	0.003	mg/L	< 0.003	-	-	-
2,4-Dimethylphenol	0.003	mg/L	< 0.003	-	-	-
2,4-Dinitrophenol	0.03	mg/L	< 0.03	-	-	-
2,4-Dinitrotoluene	0.005	mg/L	< 0.005	-	-	-
2,4,5-Trichlorophenol	0.01	mg/L	< 0.01	-	-	-
2,4,6-Trichlorophenol	0.01	mg/L	< 0.01	-	-	-
2,6-Dichlorophenol	0.003	mg/L	< 0.003	-	-	-
2,6-Dinitrotoluene	0.005	mg/L	< 0.005	-	-	-

Client Sample ID			MW55 Water	QC81 Water	QC82 Water	QC83 Water
Sample Matrix			M16-Ap09682	M16-Ap09683	M16-Ap09684	M16-Ap09685
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Semivolatile Organics						
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	-	-	-
3-Methylcholanthrene	0.005	mg/L	< 0.005	-	-	-
3,3'-Dichlorobenzidine	0.005	mg/L	< 0.005	-	-	-
4-Aminobiphenyl	0.005	mg/L	< 0.005	-	-	-
4-Bromophenyl phenyl ether	0.005	mg/L	< 0.005	-	-	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	-	-	-
4-Chlorophenyl phenyl ether	0.005	mg/L	< 0.005	-	-	-
4-Nitrophenol	0.03	mg/L	< 0.03	-	-	-
4,4'-DDD	0.005	mg/L	< 0.005	-	-	-
4,4'-DDE	0.005	mg/L	< 0.005	-	-	-
4,4'-DDT	0.005	mg/L	< 0.005	-	-	-
7,12-Dimethylbenz(a)anthracene	0.005	mg/L	< 0.005	-	-	-
a-BHC	0.005	mg/L	< 0.005	-	-	-
Acenaphthene	0.001	mg/L	< 0.001	-	-	-
Acenaphthylene	0.001	mg/L	< 0.001	-	-	-
Acetophenone	0.005	mg/L	< 0.005	-	-	-
Aldrin	0.005	mg/L	< 0.005	-	-	-
Aniline	0.005	mg/L	< 0.005	-	-	-
Anthracene	0.001	mg/L	< 0.001	-	-	-
b-BHC	0.005	mg/L	< 0.005	-	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-	-	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	-	-	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	-	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-	-	-
Benzyl chloride	0.005	mg/L	< 0.005	-	-	-
Bis(2-chloroethoxy)methane	0.005	mg/L	< 0.005	-	-	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	< 0.005	-	-	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	< 0.005	-	-	-
Butyl benzyl phthalate	0.005	mg/L	< 0.005	-	-	-
Chrysene	0.001	mg/L	< 0.001	-	-	-
d-BHC	0.005	mg/L	< 0.005	-	-	-
Di-n-butyl phthalate	0.005	mg/L	< 0.005	-	-	-
Di-n-octyl phthalate	0.005	mg/L	< 0.005	-	-	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	-	-	-
Dibenz(a,j)acridine	0.005	mg/L	< 0.005	-	-	-
Dibenzofuran	0.005	mg/L	< 0.005	-	-	-
Dieldrin	0.005	mg/L	< 0.005	-	-	-
Diethyl phthalate	0.005	mg/L	< 0.005	-	-	-
Dimethyl phthalate	0.005	mg/L	< 0.005	-	-	-
Dimethylaminoazobenzene	0.005	mg/L	< 0.005	-	-	-
Diphenylamine	0.005	mg/L	< 0.005	-	-	-
Endosulfan I	0.005	mg/L	< 0.005	-	-	-
Endosulfan II	0.005	mg/L	< 0.005	-	-	-
Endosulfan sulphate	0.005	mg/L	< 0.005	-	-	-
Endrin	0.005	mg/L	< 0.005	-	-	-
Endrin aldehyde	0.005	mg/L	< 0.005	-	-	-
Endrin ketone	0.005	mg/L	< 0.005	-	-	-
Fluoranthene	0.001	mg/L	< 0.001	-	-	-

Client Sample ID			MW55	QC81	QC82	QC83
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap09682	M16-Ap09683	M16-Ap09684	M16-Ap09685
Date Sampled			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Test/Reference	LOR	Unit				
Semivolatile Organics						
Fluorene	0.001	mg/L	< 0.001	-	-	-
g-BHC (Lindane)	0.005	mg/L	< 0.005	-	-	-
Heptachlor	0.005	mg/L	< 0.005	-	-	-
Heptachlor epoxide	0.005	mg/L	< 0.005	-	-	-
Hexachlorobenzene	0.005	mg/L	< 0.005	-	-	-
Hexachlorobutadiene	0.005	mg/L	< 0.005	-	-	-
Hexachlorocyclopentadiene	0.005	mg/L	< 0.005	-	-	-
Hexachloroethane	0.005	mg/L	< 0.005	-	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	-	-	-
Methoxychlor	0.005	mg/L	< 0.005	-	-	-
N-Nitrosodibutylamine	0.005	mg/L	< 0.005	-	-	-
N-Nitrosodipropylamine	0.005	mg/L	< 0.005	-	-	-
N-Nitrosopiperidine	0.005	mg/L	< 0.005	-	-	-
Naphthalene	0.001	mg/L	< 0.001	-	-	-
Nitrobenzene	0.05	mg/L	< 0.05	-	-	-
Pentachlorobenzene	0.005	mg/L	< 0.005	-	-	-
Pentachloronitrobenzene	0.005	mg/L	< 0.005	-	-	-
Pentachlorophenol	0.01	mg/L	< 0.01	-	-	-
Phenanthrene	0.001	mg/L	< 0.001	-	-	-
Phenol	0.003	mg/L	< 0.003	-	-	-
Pronamide	0.005	mg/L	< 0.005	-	-	-
Pyrene	0.001	mg/L	< 0.001	-	-	-
Trifluralin	0.005	mg/L	< 0.005	-	-	-
Phenol-d6 (surr.)	1	%	34	-	-	-
Nitrobenzene-d5 (surr.)	1	%	58	-	-	-
2-Fluorobiphenyl (surr.)	1	%	56	-	-	-
2.4.6-Tribromophenol (surr.)	1	%	50	-	-	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	-	-	-	10
Chloride						
Chloride	1	mg/L	-	-	-	84
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	-	-	-	680
pH						
pH	0.1	pH Units	-	-	-	7.9
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	-	-	-	0.06
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	-	-	-	< 0.05
Sulphate (as S)						
Sulphate (as S)	5	mg/L	-	-	-	12
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	-	-	-	450
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	-	-	110
Carbonate Alkalinity (as CaCO3)						
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	-	-	< 10
Hydroxide Alkalinity (as CaCO3)						
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	-	-	< 10
Nitrogens (speciated)						
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	-	-	-	0.02
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	-	-	-	14
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	-	-	-	< 0.02
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	-	-	-	2.3
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	-	2.3
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	-	-	-	16

Client Sample ID			MW55 Water	QC81 Water	QC82 Water	QC83 Water
Sample Matrix			M16-Ap09682	M16-Ap09683	M16-Ap09684	M16-Ap09685
Eurofins mgt Sample No.			Apr 11, 2016	Apr 11, 2016	Apr 11, 2016	Apr 11, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.88	-	-	3.6
Aluminium (filtered)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	-	-	0.005
Chromium (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	-	-	0.002
Copper (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.69	-	-	0.37
Iron (filtered)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.004	-	-	0.003
Lead (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	-	-	0.001
Nickel (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.011	-	-	0.002
Zinc (filtered)	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	70	-	-	55
Magnesium	0.5	mg/L	11	-	-	7.4
Potassium	0.5	mg/L	14	-	-	37
Sodium	0.5	mg/L	95	-	-	36

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Apr 15, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 12, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 12, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 15, 2016	7 Day
Organochlorine Pesticides - Method: USEPA 8081 Organochlorine Pesticides	Melbourne	Apr 15, 2016	7 Day
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Melbourne	Apr 15, 2016	7 Day
Semivolatile Organics - Method: USEPA 8270 Semivolatile Organics	Melbourne	Apr 15, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 12, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Apr 12, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 12, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 12, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 12, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 12, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Apr 12, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 12, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 12, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 12, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 12, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 12, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 12, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 12, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 12, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day

Description	Testing Site	Extracted	Holding Time
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 12, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 12, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 12, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1,2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,3,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,2,4,5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,3,5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1,4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2,3,4,6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2,4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2,4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3.3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4.4'-DDD	mg/L	< 0.005			0.005	Pass	
4.4'-DDE	mg/L	< 0.005			0.005	Pass	
4.4'-DDT	mg/L	< 0.005			0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Acidity (as CaCO3)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	78			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	98			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	93			70-130	Pass	
Xylenes - Total	%	95			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	94			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	89			70-130	Pass	
4,4'-DDE	%	121			70-130	Pass	
4,4'-DDT	%	99			70-130	Pass	
a-BHC	%	120			70-130	Pass	
Aldrin	%	97			70-130	Pass	
b-BHC	%	92			70-130	Pass	
d-BHC	%	87			70-130	Pass	
Dieldrin	%	86			70-130	Pass	
Endosulfan I	%	100			70-130	Pass	
Endosulfan II	%	80			70-130	Pass	
Endosulfan sulphate	%	91			70-130	Pass	
Endrin	%	108			70-130	Pass	
Endrin aldehyde	%	128			70-130	Pass	
Endrin ketone	%	101			70-130	Pass	
g-BHC (Lindane)	%	116			70-130	Pass	
Heptachlor	%	98			70-130	Pass	
Heptachlor epoxide	%	91			70-130	Pass	
Hexachlorobenzene	%	119			70-130	Pass	
Methoxychlor	%	83			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Diazinon	%	92		70-130	Pass	
Ethion	%	92		70-130	Pass	
Fenitrothion	%	91		70-130	Pass	
Methyl parathion	%	75		70-130	Pass	
Mevinphos	%	91		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	%	80		70-130	Pass	
LCS - % Recovery						
Semivolatile Organics						
1,2,4-Trichlorobenzene	%	85		70-130	Pass	
1,4-Dichlorobenzene	%	83		70-130	Pass	
2-Chlorophenol	%	76		30-130	Pass	
4-Chloro-3-methylphenol	%	36		30-130	Pass	
Acenaphthene	%	89		70-130	Pass	
N-Nitrosodipropylamine	%	73		70-130	Pass	
Phenol	%	83		30-130	Pass	
Pyrene	%	89		70-130	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	111		70-130	Pass	
Chloride	%	101		70-130	Pass	
Phosphate total (as P)	%	84		70-130	Pass	
Sulphate (as S)	%	110		70-130	Pass	
Total Dissolved Solids	%	89		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	95		70-130	Pass	
Nitrate (as N)	%	93		70-130	Pass	
Nitrite (as N)	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	93		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	89		80-120	Pass	
Aluminium (filtered)	%	89		80-120	Pass	
Arsenic	%	93		80-120	Pass	
Arsenic (filtered)	%	93		80-120	Pass	
Cadmium (filtered)	%	101		70-130	Pass	
Chromium	%	89		80-120	Pass	
Chromium (filtered)	%	89		80-120	Pass	
Copper	%	88		80-120	Pass	
Copper (filtered)	%	88		80-120	Pass	
Iron	%	91		80-120	Pass	
Iron (filtered)	%	91		80-120	Pass	
Lead	%	91		80-120	Pass	
Lead (filtered)	%	91		80-120	Pass	
Manganese	%	95		80-120	Pass	
Manganese (filtered)	%	95		80-120	Pass	
Mercury	%	81		75-125	Pass	
Mercury (filtered)	%	81		70-130	Pass	
Nickel	%	88		80-120	Pass	
Nickel (filtered)	%	88		80-120	Pass	
Selenium	%	97		80-120	Pass	
Selenium (filtered)	%	97		80-120	Pass	
Zinc	%	91		80-120	Pass	

Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)			%	91		80-120	Pass	
LCS - % Recovery								
Alkali Metals								
Calcium			%	97		70-130	Pass	
Magnesium			%	98		70-130	Pass	
Potassium			%	84		70-130	Pass	
Sodium			%	98		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap09666	CP	%	105		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap09666	CP	%	99		70-130	Pass	
Sulphate (as S)	M16-Ap09666	CP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Ap09561	NCP	%	81		70-130	Pass	
Nitrate (as N)	M16-Ap09439	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-Ap09561	NCP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic	M16-Ap10135	NCP	%	98		75-125	Pass	
Arsenic (filtered)	M16-Ap10788	NCP	%	97		70-130	Pass	
Cadmium (filtered)	S16-Ap12477	NCP	%	96		70-130	Pass	
Chromium	M16-Ap10135	NCP	%	99		75-125	Pass	
Chromium (filtered)	M16-Ap10788	NCP	%	91		70-130	Pass	
Copper	M16-Ap10135	NCP	%	100		75-125	Pass	
Copper (filtered)	M16-Ap10788	NCP	%	86		70-130	Pass	
Iron	M16-Ap10135	NCP	%	95		75-125	Pass	
Iron (filtered)	M16-Ap10788	NCP	%	91		70-130	Pass	
Lead	M16-Ap10135	NCP	%	102		75-125	Pass	
Lead (filtered)	M16-Ap10788	NCP	%	89		70-130	Pass	
Manganese	M16-Ap10135	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-Ap10788	NCP	%	95		70-130	Pass	
Mercury	M16-Ap10135	NCP	%	90		70-130	Pass	
Mercury (filtered)	M16-Ap10788	NCP	%	77		70-130	Pass	
Nickel	M16-Ap10135	NCP	%	99		75-125	Pass	
Nickel (filtered)	M16-Ap10788	NCP	%	86		70-130	Pass	
Selenium	M16-Ap10135	NCP	%	100		75-125	Pass	
Selenium (filtered)	M16-Ap10788	NCP	%	96		70-130	Pass	
Zinc	M16-Ap10135	NCP	%	97		75-125	Pass	
Zinc (filtered)	M16-Ap10788	NCP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	M16-Ap09666	CP	%	95		70-130	Pass	
Potassium	M16-Ap10130	NCP	%	92		70-130	Pass	
Sodium	M16-Ap09666	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap09667	CP	%	73		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap09674	CP	%	106		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap09674	CP	%	103		70-130	Pass	
Sulphate (as S)	M16-Ap09674	CP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ap09676	CP	%	97		70-130	Pass	
Magnesium	M16-Ap09676	CP	%	104		70-130	Pass	
Sodium	M16-Ap09676	CP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ap09680	CP	%	74		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-Ap11984	NCP	%	90		70-130	Pass	
TRH C10-C14	M16-Ap09696	NCP	%	117		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-Ap11984	NCP	%	96		70-130	Pass	
Toluene	M16-Ap11984	NCP	%	94		70-130	Pass	
Ethylbenzene	M16-Ap11984	NCP	%	96		70-130	Pass	
m&p-Xylenes	M16-Ap11984	NCP	%	96		70-130	Pass	
o-Xylene	M16-Ap11984	NCP	%	93		70-130	Pass	
Xylenes - Total	M16-Ap11984	NCP	%	95		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-Ap11984	NCP	%	87		70-130	Pass	
TRH C6-C10	M16-Ap11984	NCP	%	82		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4,4'-DDD	M16-Ap11776	NCP	%	71		70-130	Pass	
4,4'-DDE	M16-Ap11776	NCP	%	86		70-130	Pass	
Aldrin	M16-Ap11776	NCP	%	74		70-130	Pass	
b-BHC	M16-Ap11776	NCP	%	79		70-130	Pass	
d-BHC	M16-Ap11776	NCP	%	88		70-130	Pass	
Dieldrin	M16-Ap11776	NCP	%	94		70-130	Pass	
Endosulfan I	M16-Ap11776	NCP	%	91		70-130	Pass	
Endosulfan II	M16-Ap11776	NCP	%	89		70-130	Pass	
Endosulfan sulphate	M16-Ap11776	NCP	%	79		70-130	Pass	
Endrin	M16-Ap11776	NCP	%	75		70-130	Pass	
Endrin aldehyde	M16-Ap11776	NCP	%	75		70-130	Pass	
Endrin ketone	M16-Ap11776	NCP	%	77		70-130	Pass	
g-BHC (Lindane)	M16-Ap11776	NCP	%	129		70-130	Pass	
Heptachlor epoxide	M16-Ap11776	NCP	%	112		70-130	Pass	
Hexachlorobenzene	M16-Ap11776	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-Ap09696	NCP	%	118		70-130	Pass	
Spike - % Recovery								
Semivolatile Organics				Result 1				
1,2,4-Trichlorobenzene	M16-Ap09565	NCP	%	82		70-130	Pass	
1,4-Dichlorobenzene	M16-Ap09565	NCP	%	81		70-130	Pass	
2-Chlorophenol	M16-Ap09565	NCP	%	81		30-130	Pass	
2,4-Dinitrotoluene	M16-Ap09565	NCP	%	71		70-130	Pass	
4-Chloro-3-methylphenol	M16-Ap09565	NCP	%	80		30-130	Pass	
Acenaphthene	M16-Ap09565	NCP	%	83		70-130	Pass	
N-Nitrosodipropylamine	M16-Ap09565	NCP	%	101		70-130	Pass	
Pentachlorophenol	M16-Ap09565	NCP	%	34		30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenol	M16-Ap09565	NCP	%	51			30-130	Pass	
Pyrene	M16-Ap09565	NCP	%	88			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ap09685	CP	%	98			70-130	Pass	
Phosphorus reactive (as P)	M16-Ap09685	CP	%	109			70-130	Pass	
Sulphate (as S)	M16-Ap09685	CP	%	98			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-Ap09685	CP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ap09666	CP	mg/L	34	25	3.7	30%	Pass	
Conductivity (at 25°C)	M16-Ap09666	CP	uS/cm	200	200	<1	30%	Pass	
pH	M16-Ap09666	CP	pH Units	7.1	7.1	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Ap09666	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ap09666	CP	mg/L	< 5	< 5	<1	30%	Pass	
Total Dissolved Solids	M16-Ap09796	NCP	mg/L	1100	1100	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap09666	CP	mg/L	48	40	4.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ap09666	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap09666	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Ap09666	CP	mg/L	0.90	0.90	1.0	30%	Pass	
Nitrate (as N)	M16-Ap09666	CP	mg/L	0.27	0.26	3.0	30%	Pass	
Nitrite (as N)	M16-Ap09666	CP	mg/L	0.05	0.06	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Ap09666	CP	mg/L	6.3	6.6	4.0	30%	Pass	
Arsenic	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S16-Ap12476	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Ap10788	NCP	mg/L	0.001	0.001	5.0	30%	Pass	
Iron	M16-Ap10135	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	M16-Ap10788	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Ap10788	NCP	mg/L	0.002	0.002	6.0	30%	Pass	
Manganese	M16-Ap10135	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-Ap10788	NCP	mg/L	< 0.005	0.005	8.0	30%	Pass	
Mercury	M16-Ap10135	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ap10788	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ap10788	NCP	mg/L	0.013	0.014	4.0	30%	Pass	
Zinc	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Ap10788	NCP	mg/L	0.005	0.006	6.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap09668	CP	mg/L	22	26	16	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ap09669	CP	mg/L	0.09	0.11	15	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap09672	CP	mg/L	< 0.05	0.05	11	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ap09674	CP	mg/L	10	12	14	30%	Pass
Phosphorus reactive (as P)	M16-Ap09674	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ap09674	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Ap09676	CP	uS/cm	380	370	1.0	30%	Pass
pH	M16-Ap09676	CP	pH Units	7.4	7.3	pass	30%	Pass
Turbidity	M16-Ap09676	CP	NTU	1.6	1.6	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap09676	CP	mg/L	26	25	5.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ap09676	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap09676	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ap09676	CP	mg/L	0.26	0.22	14	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ap09676	CP	mg/L	6.2	6.1	2.0	30%	Pass
Magnesium	M16-Ap09676	CP	mg/L	8.2	8.1	2.0	30%	Pass
Potassium	M16-Ap09676	CP	mg/L	2.1	2.1	2.0	30%	Pass
Sodium	M16-Ap09676	CP	mg/L	51	50	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap09678	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Ap09679	CP	mg/L	0.36	0.39	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap09680	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap09681	CP	mg/L	0.02	0.02	2.0	30%	Pass
Nitrate (as N)	M16-Ap09681	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ap09681	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	B16-Ap14329	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
TRH C10-C14	M16-Ap09695	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M16-Ap09695	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M16-Ap09695	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	B16-Ap14329	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	B16-Ap14329	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	B16-Ap14329	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	B16-Ap14329	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	B16-Ap14329	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	B16-Ap14329	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	B16-Ap14329	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	B16-Ap14329	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M16-Ap11775	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
4,4'-DDD	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDE	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
4,4'-DDT	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
a-BHC	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Aldrin	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
b-BHC	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
d-BHC	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Dieldrin	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan I	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan II	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endosulfan sulphate	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin aldehyde	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Endrin ketone	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
g-BHC (Lindane)	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Heptachlor epoxide	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Hexachlorobenzene	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Methoxychlor	M16-Ap11775	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Toxaphene	M16-Ap05584	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Bolstar	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Chlorpyrifos	M16-Ap11775	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Demeton-O	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Diazinon	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Dichlorvos	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Disulfoton	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ethion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ethoprop	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fenitrothion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fensulfthion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fenthion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Merphos	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Methyl parathion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Mevinphos	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Naled	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Phorate	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ronnel	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Tokuthion	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Trichloronate	M16-Ap11775	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-Ap09695	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-Ap09695	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-Ap09695	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2-Methyl-4,6-dinitrophenol	M16-Ap09564	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
1-Chloronaphthalene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1-Naphthylamine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2-Dichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3-Trichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4-Trichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3-Dichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3,5-Trichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,4-Dichlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chloronaphthalene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chlorophenol	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Methylnaphthalene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Methylphenol (o-Cresol)	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Naphthylamine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitroaniline	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitrophenol	M16-Ap09564	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2-Picoline	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,3,4,6-Tetrachlorophenol	M16-Ap09640	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dichlorophenol	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dimethylphenol	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dinitrophenol	M16-Ap09564	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2,4-Dinitrotoluene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,4,5-Trichlorophenol	M16-Ap09564	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4,6-Trichlorophenol	M16-Ap09564	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,6-Dichlorophenol	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,6-Dinitrotoluene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M16-Ap09564	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass
3-Methylcholanthrene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3,3'-Dichlorobenzidine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Aminobiphenyl	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Bromophenyl phenyl ether	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Chloro-3-methylphenol	M16-Ap09564	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Chlorophenyl phenyl ether	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Nitrophenol	M16-Ap09564	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass
4,4'-DDD	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDE	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDT	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
7,12-Dimethylbenz(a)anthracene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
a-BHC	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Acenaphthene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acetophenone	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aldrin	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aniline	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Anthracene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
b-BHC	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
Benz(a)anthracene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzyl chloride	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroethoxy)methane	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroisopropyl)ether	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-ethylhexyl)phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Butyl benzyl phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Chrysene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
d-BHC	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-butyl phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-octyl phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenz(a,h)anthracene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,j)acridine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenzofuran	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dieldrin	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diethyl phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethyl phthalate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethylaminoazobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diphenylamine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan I	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan II	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan sulphate	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin aldehyde	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin ketone	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Fluoranthene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
g-BHC (Lindane)	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor epoxide	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobutadiene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorocyclopentadiene	M16-Ap09640	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Hexachloroethane	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Methoxychlor	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodibutylamine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodipropylamine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosopiperidine	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Naphthalene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nitrobenzene	M16-Ap09640	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Pentachlorobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachloronitrobenzene	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachlorophenol	M16-Ap09564	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Phenanthrene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenol	M16-Ap09564	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Promamide	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pyrene	M16-Ap09564	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Trifluralin	M16-Ap09640	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ap09685	CP	mg/L	84	86	2.2	30%	Pass
Phosphorus reactive (as P)	M16-Ap09685	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ap09685	CP	mg/L	12	12	2.3	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Ap09685	CP	mg/L	2.3	2.0	15	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 13, 2016 8:48 AM**
Eurofins | mgt reference: **496514**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **496514-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Apr 13, 2016

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Ap10917	M16-Ap10918	M16-Ap10919	M16-Ap10920
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	30	13	15
Ammonia (as N)	0.01	mg/L	0.11	0.35	0.10	0.22
Chloride	1	mg/L	320	2800	8700	820
Conductivity (at 25°C)	1	uS/cm	1200	8400	32000	2500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.58	44	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.56	44	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.2	< 0.02
pH	0.1	pH Units	7.8	4.1	7.9	6.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.17	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.16	< 0.05
Sulphate (as S)	5	mg/L	10	80	390	35
Total Dissolved Solids	10	mg/L	690	4600	20000	1400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.4	1.6	0.2
Total Nitrogen (as N)	0.2	mg/L	0.7	1.0	46	0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	< 20	150	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	2.5	4.3	1.8	1.0
Aluminium (filtered)	0.05	mg/L	< 0.05	0.84	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.009	0.004	0.006	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.006	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00048	0.00073	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00033	0.00073	< 0.00005
Chromium	0.001	mg/L	0.004	0.003	< 0.005	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.008	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.008	< 0.001
Iron	0.05	mg/L	39	12	1.5	10
Iron (filtered)	0.05	mg/L	< 0.05	0.16	0.11	< 0.05
Lead	0.001	mg/L	0.011	0.007	0.006	0.003
Lead (filtered)	0.001	mg/L	< 0.001	0.004	< 0.005	< 0.001
Manganese	0.005	mg/L	0.052	0.053	0.080	0.017
Manganese (filtered)	0.005	mg/L	0.037	0.052	0.080	0.015

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Ap10917	M16-Ap10918	M16-Ap10919	M16-Ap10920
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Nickel	0.001	mg/L	0.003	0.022	0.017	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.022	0.017	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	0.016	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.010	< 0.001
Zinc	0.001	mg/L	0.007	0.027	0.052	0.007
Zinc (filtered)	0.001	mg/L	< 0.001	0.024	0.052	0.006
Alkali Metals						
Calcium	0.5	mg/L	52	52	150	11
Magnesium	0.5	mg/L	20	210	680	49
Potassium	0.5	mg/L	8.9	21	120	11
Sodium	0.5	mg/L	140	1300	5300	400

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW44 Water
Sample Matrix			M16-Ap10921	M16-Ap10922	M16-Ap10923	M16-Ap10924
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	25	30	17	< 10
Ammonia (as N)	0.01	mg/L	0.28	0.35	0.07	0.15
Chloride	1	mg/L	2900	1700	920	480
Conductivity (at 25°C)	1	uS/cm	8500	5200	2900	2300
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.07	< 0.05	11
Nitrate (as N)	0.02	mg/L	0.04	0.07	< 0.02	10
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.68
pH	0.1	pH Units	6.8	5.9	4.6	8.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.2
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.1
Sulphate (as S)	5	mg/L	54	65	43	31
Total Dissolved Solids	10	mg/L	4700	2900	1600	1500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.4	< 0.2	3.7
Total Nitrogen (as N)	0.2	mg/L	0.3	0.5	< 0.2	15
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	29	< 20	< 20	390
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	0.46	2.6	0.80	43
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.17	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	< 0.001	0.042
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.022
Cadmium	0.00005	mg/L	< 0.00005	0.00010	0.00040	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00009	0.00009	< 0.00005
Chromium	0.001	mg/L	0.002	0.006	< 0.001	0.066
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Copper	0.001	mg/L	< 0.001	0.011	< 0.001	0.023

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW44 Water
Sample Matrix			M16-Ap10921	M16-Ap10922	M16-Ap10923	M16-Ap10924
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	0.012
Iron	0.05	mg/L	3.8	3.6	0.99	28
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.23
Lead	0.001	mg/L	0.003	0.040	0.006	0.075
Lead (filtered)	0.001	mg/L	< 0.001	0.013	0.003	0.001
Manganese	0.005	mg/L	0.022	0.040	0.027	0.015
Manganese (filtered)	0.005	mg/L	0.021	0.040	0.027	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	0.0003
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.008	0.007	0.024
Nickel (filtered)	0.001	mg/L	0.003	0.008	0.007	0.008
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.076
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.053
Zinc	0.001	mg/L	0.011	0.092	0.019	0.029
Zinc (filtered)	0.001	mg/L	0.009	0.090	0.019	0.008
Alkali Metals						
Calcium	0.5	mg/L	27	24	12	18
Magnesium	0.5	mg/L	160	120	60	32
Potassium	0.5	mg/L	37	16	11	6.3
Sodium	0.5	mg/L	1500	840	470	420

Client Sample ID			MW43 Water	MW42 Water	SWL21-1 Water	SWL21-2 Water
Sample Matrix			M16-Ap10925	M16-Ap10926	M16-Ap10927	M16-Ap10928
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	49	28	< 10	< 10
Ammonia (as N)	0.01	mg/L	1.4	0.28	0.20	0.20
Chloride	1	mg/L	1200	50	450	430
Conductivity (at 25°C)	1	uS/cm	4000	210	1500	1500
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.12	< 0.02	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
pH	0.1	pH Units	6.8	4.2	7.4	7.1
Phosphate total (as P)	0.05	mg/L	0.50	< 0.05	0.31	0.36
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.20	0.15
Sulphate (as S)	5	mg/L	20	< 5	8.6	8.7
Total Dissolved Solids	10	mg/L	^{Q19} 3200	^{Q19} 180	870	870
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.5	0.3	0.7	0.2
Total Nitrogen (as N)	0.2	mg/L	5.6	0.3	0.7	0.2
Turbidity	1	NTU	-	-	31	150
Thermotolerant Coliforms - time tested		hr:min	-	-	18:20	18:20
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	150	< 20	32	32
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW43 Water	MW42 Water	SWL21-1 Water	SWL21-2 Water
Sample Matrix			M16-Ap10925	M16-Ap10926	M16-Ap10927	M16-Ap10928
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	8.0	1.4	0.15	2.0
Aluminium (filtered)	0.05	mg/L	1.4	0.54	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.009	< 0.001	0.002	0.003
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00014
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.019	0.005	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	0.27	2.4	5.2
Iron (filtered)	0.05	mg/L	0.12	0.17	1.5	1.4
Lead	0.001	mg/L	0.011	0.007	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	< 0.005	0.083	0.12
Manganese (filtered)	0.005	mg/L	0.008	< 0.005	0.078	0.059
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.002	0.003	0.003
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.002	0.001
Selenium	0.001	mg/L	0.009	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.002	0.005	0.020
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.005	0.004
Alkali Metals						
Calcium	0.5	mg/L	59	1.6	14	14
Magnesium	0.5	mg/L	97	4.4	30	31
Potassium	0.5	mg/L	7.9	1.0	12	12
Sodium	0.5	mg/L	590	28	240	240
Pathogens						
E.coli	1	MPN/100mL	-	-	330	2400
Thermotolerant Coliforms	1	cfu/100mL	-	-	500	5600

Client Sample ID			SWL21-3 Water	SWL19-1 Water	SWL19-2 Water	SWL19-3 Water
Sample Matrix			M16-Ap10929	M16-Ap10930	M16-Ap10931	M16-Ap10932
Eurofins mgt Sample No.			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.13	< 0.01	0.02	0.02
Chloride	1	mg/L	420	1100	1200	1200
Conductivity (at 25°C)	1	uS/cm	1500	3700	3700	3700
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.04	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	7.2	7.6	7.4	7.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			SWL21-3	SWL19-1	SWL19-2	SWL19-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap10929	M16-Ap10930	M16-Ap10931	M16-Ap10932
Date Sampled			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Test/Reference	LOR	Unit				
Phosphorus reactive (as P)	0.05	mg/L	0.14	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.5	32	33	36
Total Dissolved Solids	10	mg/L	820	2100	2100	2100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.7	1.9	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	5.7	1.9	< 0.2	< 0.2
Turbidity	1	NTU	24	2.0	21	25
Thermotolerant Coliforms - time tested		hr:min	-	18:20	18:20	18:20
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	28	45	41	37
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Heavy Metals						
Aluminium	0.05	mg/L	0.07	0.08	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	0.31	1.4	0.45
Iron (filtered)	0.05	mg/L	1.2	0.13	0.13	0.17
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.079	0.073	0.078	0.078
Manganese (filtered)	0.005	mg/L	0.074	0.073	0.067	0.065
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.010	< 0.001	0.003	0.004
Zinc (filtered)	0.001	mg/L	0.006	< 0.001	0.002	0.004
Alkali Metals						
Calcium	0.5	mg/L	14	12	12	12
Magnesium	0.5	mg/L	30	69	75	74
Potassium	0.5	mg/L	11	14	15	14
Sodium	0.5	mg/L	220	650	600	620
Pathogens						
E.coli	1	MPN/100mL	790	M ₁₅ <10	M ₁₅ <10	20
Thermotolerant Coliforms	1	cfu/100mL	-	<10	<10	~20
Thermotolerant Coliforms	1	MPN/100mL	790	-	-	-

Client Sample ID			QC84	QC85	QC86
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ap10933	M16-Ap10934	M16-Ap10935
Date Sampled			Apr 12, 2016	Apr 12, 2016	Apr 12, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	-	-	17
Ammonia (as N)	0.01	mg/L	-	-	0.27
Chloride	1	mg/L	-	-	2800
Conductivity (at 25°C)	1	uS/cm	-	-	8600
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	0.05
Nitrate (as N)	0.02	mg/L	-	-	0.05
Nitrite (as N)	0.02	mg/L	-	-	< 0.02
pH	0.1	pH Units	-	-	6.9
Phosphate total (as P)	0.05	mg/L	-	-	7.5
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05
Sulphate (as S)	5	mg/L	-	-	53
Total Dissolved Solids	10	mg/L	-	-	4700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.3
Total Nitrogen (as N)	0.2	mg/L	-	-	0.4
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	26
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Heavy Metals					
Aluminium	0.05	mg/L	-	-	0.89
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	-	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	0.00006
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.00005
Chromium	0.001	mg/L	-	-	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	5.5
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	-	-	0.006
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.024
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.019
Mercury	0.0001	mg/L	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	-	0.013
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	0.008
Alkali Metals					
Calcium	0.5	mg/L	-	-	31
Magnesium	0.5	mg/L	-	-	190
Potassium	0.5	mg/L	-	-	46
Sodium	0.5	mg/L	-	-	1400

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 13, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 13, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	Apr 18, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 13, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 13, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 13, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 13, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 13, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Apr 18, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Apr 18, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 13, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 13, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 13, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 13, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 13, 2016	24 Hour
Thermotolerant Coliforms - Method: 6607: Microbes by Membrane Filtration AS/NZS 4276.7:2007	Melbourne	Apr 19, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 13, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 13, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 13, 2016	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	104			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	96			70-130	Pass		
Chloride	%	104			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Phosphate total (as P)	%	80			70-130	Pass		
Sulphate (as S)	%	107			70-130	Pass		
Total Dissolved Solids	%	93			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	89			80-120	Pass		
Aluminium (filtered)	%	89			80-120	Pass		
Arsenic	%	95			80-120	Pass		
Arsenic (filtered)	%	95			80-120	Pass		
Cadmium	%	101			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	100			80-120	Pass		
Chromium (filtered)	%	100			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	93			80-120	Pass		
Iron	%	107			80-120	Pass		
Iron (filtered)	%	107			80-120	Pass		
Lead	%	91			80-120	Pass		
Lead (filtered)	%	91			80-120	Pass		
Manganese	%	103			80-120	Pass		
Manganese (filtered)	%	103			80-120	Pass		
Mercury	%	81			75-125	Pass		
Mercury (filtered)	%	81			70-130	Pass		
Nickel	%	85			80-120	Pass		
Nickel (filtered)	%	85			80-120	Pass		
Selenium	%	94			80-120	Pass		
Selenium (filtered)	%	94			80-120	Pass		
Zinc	%	91			80-120	Pass		
Zinc (filtered)	%	91			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	87			70-130	Pass		
Magnesium	%	95			70-130	Pass		
Potassium	%	84			70-130	Pass		
Sodium	%	88			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-Ap09880	NCP	%	97		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Ap09880	NCP	%	93		70-130	Pass	
Nitrate (as N)	M16-Ap09880	NCP	%	93		70-130	Pass	
Nitrite (as N)	M16-Ap09880	NCP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S16-Ap10336	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap10127	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Ap10135	NCP	%	98		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic (filtered)	M16-Ap10788	NCP	%	97			70-130	Pass	
Cadmium	S16-Ap12525	NCP	%	85			70-130	Pass	
Cadmium (filtered)	S16-Ap17710	NCP	%	109			70-130	Pass	
Chromium	M16-Ap10135	NCP	%	99			75-125	Pass	
Chromium (filtered)	M16-Ap10788	NCP	%	91			70-130	Pass	
Copper	M16-Ap10135	NCP	%	100			75-125	Pass	
Copper (filtered)	M16-Ap10788	NCP	%	86			70-130	Pass	
Iron (filtered)	M16-Ap10788	NCP	%	91			70-130	Pass	
Lead	M16-Ap10135	NCP	%	102			75-125	Pass	
Lead (filtered)	M16-Ap10788	NCP	%	89			70-130	Pass	
Manganese	M16-Ap10135	NCP	%	97			75-125	Pass	
Manganese (filtered)	M16-Ap10788	NCP	%	95			70-130	Pass	
Mercury	M16-Ap10135	NCP	%	90			70-130	Pass	
Mercury (filtered)	M16-Ap10788	NCP	%	77			70-130	Pass	
Nickel	M16-Ap10135	NCP	%	99			75-125	Pass	
Nickel (filtered)	M16-Ap10788	NCP	%	86			70-130	Pass	
Selenium	M16-Ap10135	NCP	%	100			75-125	Pass	
Selenium (filtered)	M16-Ap10788	NCP	%	96			70-130	Pass	
Zinc	M16-Ap10135	NCP	%	97			75-125	Pass	
Zinc (filtered)	M16-Ap10788	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	M16-Ap10135	NCP	%	95			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ap10920	CP	%	90			70-130	Pass	
Magnesium	M16-Ap10920	CP	%	93			70-130	Pass	
Potassium	M16-Ap10920	CP	%	86			70-130	Pass	
Sodium	M16-Ap10920	CP	%	107			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ap10927	CP	%	72			70-130	Pass	
Phosphorus reactive (as P)	M16-Ap10927	CP	%	108			70-130	Pass	
Sulphate (as S)	M16-Ap10927	CP	%	98			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ap10930	CP	%	90			70-130	Pass	
Magnesium	M16-Ap10930	CP	%	94			70-130	Pass	
Potassium	M16-Ap10930	CP	%	87			70-130	Pass	
Sodium	M16-Ap10930	CP	%	106			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Ap10932	CP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Ap10917	CP	uS/cm	1200	1300	<1	30%	Pass	
pH	M16-Ap10917	CP	pH Units	7.8	7.9	pass	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S16-Ap10336	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Ap10917	CP	mg/L	110	110	2.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Ap10917	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Ap10917	CP	mg/L	< 10	< 10	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ap10917	CP	mg/L	2.5	2.6	3.0	30%	Pass
Aluminium (filtered)	M16-Ap10917	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	S16-Ap12800	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Cadmium (filtered)	S16-Ap17709	NCP	mg/L	0.0006	0.0006	2.0	30%	Pass
Chromium	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Ap10788	NCP	mg/L	0.001	0.001	5.0	30%	Pass
Iron	M16-Ap10917	CP	mg/L	39	38	3.0	30%	Pass
Iron (filtered)	M16-Ap10788	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Ap10788	NCP	mg/L	0.002	0.002	6.0	30%	Pass
Manganese	M16-Ap10135	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Ap10788	NCP	mg/L	< 0.005	0.005	8.0	30%	Pass
Mercury	M16-Ap10135	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Ap10788	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-Ap10788	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Ap10788	NCP	mg/L	0.013	0.014	4.0	30%	Pass
Zinc	M16-Ap10135	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Ap10788	NCP	mg/L	0.005	0.006	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap10918	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M16-Ap10918	CP	mg/L	4600	4400	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-Ap10919	CP	mg/L	13	16	18	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ap10920	CP	mg/L	11	11	1.0	30%	Pass
Magnesium	M16-Ap10920	CP	mg/L	49	50	1.0	30%	Pass
Potassium	M16-Ap10920	CP	mg/L	11	9.7	12	30%	Pass
Sodium	M16-Ap10920	CP	mg/L	400	400	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Ap10921	CP	mg/L	4700	4500	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Ap10922	CP	mg/L	2900	2700	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Ap10927	CP	mg/L	450	450	<1	30%	Pass
Conductivity (at 25°C)	M16-Ap10927	CP	uS/cm	1500	1500	1.0	30%	Pass
pH	M16-Ap10927	CP	pH Units	7.4	7.3	pass	30%	Pass
Phosphorus reactive (as P)	M16-Ap10927	CP	mg/L	0.20	0.21	4.5	30%	Pass
Sulphate (as S)	M16-Ap10927	CP	mg/L	8.6	8.1	5.5	30%	Pass
Turbidity	M16-Ap10927	CP	NTU	31	30	1.0	30%	Pass

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap10927	CP	mg/L	32	31	4.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ap10927	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap10927	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ap10927	CP	mg/L	0.15	0.15	3.0	30%	Pass
Aluminium (filtered)	M16-Ap10927	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap10928	CP	mg/L	0.36	0.37	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap10929	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ap10930	CP	mg/L	12	12	1.0	30%	Pass
Magnesium	M16-Ap10930	CP	mg/L	69	70	1.0	30%	Pass
Potassium	M16-Ap10930	CP	mg/L	14	14	<1	30%	Pass
Sodium	M16-Ap10930	CP	mg/L	650	640	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap10932	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap10935	CP	mg/L	0.27	0.27	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-Ap10935	CP	mg/L	0.05	< 0.05	10	30%	Pass
Nitrate (as N)	M16-Ap10935	CP	mg/L	0.05	0.05	10	30%	Pass
Nitrite (as N)	M16-Ap10935	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 14, 2016 8:45 AM**
Eurofins | mgt reference: **496717**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

MW46,47,48 LABELLED MW45,46,47 SAMPLES SWL15-3 NOT RECEIVED | 345-363: 1X 250mL MU EACH RECEIVED IN SYD 15/04 SS |

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **496717-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Apr 14, 2016

Client Sample ID			MW45 Water	MW46 Water	MW47 Water	MW39 Water
Sample Matrix			M16-Ap12345	M16-Ap12346	M16-Ap12347	M16-Ap12348
Eurofins mgt Sample No.			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	480	660	650	76
Conductivity (at 25°C)	1	uS/cm	1700	2400	2400	440
pH	0.1	pH Units	8.1	8.0	8.4	7.3
Phosphate total (as P)	0.05	mg/L	0.12	0.17	0.20	0.81
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.06	0.81
Sulphate (as S)	5	mg/L	13	5.4	12	11
Total Dissolved Solids	10	mg/L	1000	1500	1400	280
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	250	260	240	53
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.26	0.52	0.15	1.4
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.31	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	1.2	< 0.2	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	1.7	< 0.2	3.0
Total Nitrogen (as N)	0.2	mg/L	1.1	1.7	0.3	3.1
Heavy Metals						
Aluminium	0.05	mg/L	6.9	3.8	7.5	0.15
Aluminium (filtered)	0.05	mg/L	6.0	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.033	0.002	0.007	0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	0.001	0.001
Cadmium	0.00005	mg/L	0.00008	0.00006	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.014	0.008	0.017	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.008	0.004	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	61	4.4	4.7	0.24
Iron (filtered)	0.05	mg/L	< 0.05	0.18	< 0.05	0.15
Lead	0.001	mg/L	0.020	0.006	0.013	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.010	0.013	0.13	0.010

Client Sample ID			MW45 Water	MW46 Water	MW47 Water	MW39 Water
Sample Matrix			M16-Ap12345	M16-Ap12346	M16-Ap12347	M16-Ap12348
Eurofins mgt Sample No.			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.005	0.007	0.10	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.026	0.007	0.012	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	0.006	0.003	0.003	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.020	0.014	0.012
Zinc (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.008
Alkali Metals						
Calcium	0.5	mg/L	63	87	69	21
Magnesium	0.5	mg/L	38	51	45	7.3
Potassium	0.5	mg/L	4.4	6.1	4.6	16
Sodium	0.5	mg/L	240	320	340	35

Client Sample ID			MW38 Water	MW37 Water	MW36 Water	SWL18-1 Water
Sample Matrix			M16-Ap12349	M16-Ap12350	M16-Ap12351	M16-Ap12352
Eurofins mgt Sample No.			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	15	< 10	< 10	< 10
Chloride	1	mg/L	140	18	15	980
Conductivity (at 25°C)	1	uS/cm	610	120	130	3100
pH	0.1	pH Units	7.0	6.1	6.6	7.6
Phosphate total (as P)	0.05	mg/L	0.51	0.31	0.11	0.64
Phosphorus reactive (as P)	0.05	mg/L	0.47	0.27	0.10	0.20
Sulphate (as S)	5	mg/L	6.3	< 5	< 5	18
Total Dissolved Solids	10	mg/L	400	^{Q19} 95	^{Q19} 95	1900
Turbidity	1	NTU	-	-	-	23
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	< 20	< 20	86
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.75	0.39	< 0.01	0.01
Nitrate (as N)	0.02	mg/L	< 0.02	1.8	4.4	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.05	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.1	1.5	0.4	2.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.9	1.9	0.4	2.2
Total Nitrogen (as N)	0.2	mg/L	3.9	3.7	4.9	2.2
Heavy Metals						
Aluminium	0.05	mg/L	3.8	0.26	0.07	0.68
Aluminium (filtered)	0.05	mg/L	0.42	0.26	< 0.05	0.10
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW38	MW37	MW36	SWL18-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12349	M16-Ap12350	M16-Ap12351	M16-Ap12352
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.4	< 0.05	< 0.05	2.0
Iron (filtered)	0.05	mg/L	0.86	< 0.05	< 0.05	1.1
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.26
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.21
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.004	0.003	0.006
Zinc (filtered)	0.001	mg/L	0.004	0.004	0.002	0.005
Alkali Metals						
Calcium	0.5	mg/L	20	6.5	13	22
Magnesium	0.5	mg/L	9.8	2.4	1.8	69
Potassium	0.5	mg/L	14	1.4	0.5	17
Sodium	0.5	mg/L	65	9.8	7.6	480
Pathogens						
E.coli	1	MPN/100mL	-	-	-	10
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	210

Client Sample ID			SWL18-2	SWL18-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12353	M16-Ap12354	M16-Ap12355	M16-Ap12356
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	43	20
Chloride	1	mg/L	1000	1000	87	85
Conductivity (at 25°C)	1	uS/cm	3200	3300	340	330
pH	0.1	pH Units	7.6	7.6	4.9	4.8
Phosphate total (as P)	0.05	mg/L	0.83	0.95	0.52	0.43
Phosphorus reactive (as P)	0.05	mg/L	0.20	0.18	0.38	0.35
Sulphate (as S)	5	mg/L	18	17	< 5	< 5
Total Dissolved Solids	10	mg/L	2000	2000	^{Q19} 270	^{Q19} 290
Turbidity	1	NTU	29	30	590	19
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	84	87	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			SWL18-2	SWL18-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12353	M16-Ap12354	M16-Ap12355	M16-Ap12356
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.07	0.07
Nitrate (as N)	0.02	mg/L	0.03	0.06	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.3	2.5	28	1.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.3	2.5	28	2.0
Total Nitrogen (as N)	0.2	mg/L	2.3	2.6	28	2.0
Heavy Metals						
Aluminium	0.05	mg/L	0.13	0.12	2.6	1.2
Aluminium (filtered)	0.05	mg/L	0.05	0.12	0.68	0.78
Arsenic	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00030	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.003	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	2.9	3.7	0.72	0.39
Iron (filtered)	0.05	mg/L	1.2	1.0	0.31	0.28
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.27	0.28	0.007	0.006
Manganese (filtered)	0.005	mg/L	0.23	0.21	< 0.005	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.005	0.015	0.006
Zinc (filtered)	0.001	mg/L	0.004	0.003	0.004	0.006
Alkali Metals						
Calcium	0.5	mg/L	22	26	4.2	4.1
Magnesium	0.5	mg/L	68	69	6.4	6.4
Potassium	0.5	mg/L	17	17	3.5	3.4
Sodium	0.5	mg/L	480	490	43	43
Pathogens						
E.coli	1	MPN/100mL	270	97	1700	2100
Thermotolerant Coliforms	1	MPN/100mL	270	450	3300	2600

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	QC87
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12357	M16-Ap12358	M16-Ap12359	M16-Ap12360
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Chloride	1	mg/L	1700	1600	1600	-
Conductivity (at 25°C)	1	uS/cm	4900	4900	4700	-
pH	0.1	pH Units	6.4	6.5	6.5	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	57	55	49	-
Total Dissolved Solids	10	mg/L	3000	3000	2800	-
Turbidity	1	NTU	27	24	24	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.01	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.2	1.5	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	1.2	1.5	-
Total Nitrogen (as N)	0.2	mg/L	1.4	1.2	1.5	-
Heavy Metals						
Aluminium	0.05	mg/L	0.17	< 0.05	< 0.05	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.1	2.5	2.6	-
Iron (filtered)	0.05	mg/L	1.0	1.5	1.7	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.046	0.045	0.040	-
Manganese (filtered)	0.005	mg/L	0.044	0.045	0.040	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.003	0.003	-
Nickel (filtered)	0.001	mg/L	0.004	0.003	0.003	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.003	0.003	-
Zinc (filtered)	0.001	mg/L	0.005	0.003	0.003	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	17	16	15	-
Magnesium	0.5	mg/L	97	94	89	-
Potassium	0.5	mg/L	17	16	15	-
Sodium	0.5	mg/L	850	820	750	-

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	QC87
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12357	M16-Ap12358	M16-Ap12359	M16-Ap12360
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit				
Pathogens						
E.coli	1	MPN/100mL	230	380	260	-
Thermotolerant Coliforms	1	MPN/100mL	500	930	1200	-

Client Sample ID			QC88	SWL16-1	SWL16-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12361	M16-Ap12362	M16-Ap12363
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO₃)					
Acidity (as CaCO ₃)	10	mg/L	-	< 10	33
Chloride					
Chloride	1	mg/L	-	220	410
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	-	990	2000
pH					
pH	0.1	pH Units	-	7.4	7.3
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	-	0.85	0.52
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	-	0.85	0.52
Sulphate (as S)					
Sulphate (as S)	5	mg/L	-	36	100
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	-	^{Q19} 760	^{Q19} 1600
Turbidity					
Turbidity	1	NTU	-	10	1.2
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO₃)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	61	97
Carbonate Alkalinity (as CaCO₃)					
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10
Hydroxide Alkalinity (as CaCO₃)					
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10
Nitrogens (speciated)					
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	-	0.10	0.34
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	-	< 0.02	< 0.02
Nitrite (as N)					
Nitrite (as N)	0.02	mg/L	-	< 0.02	0.02
Organic Nitrogen (as N)					
Organic Nitrogen (as N)	0.2	mg/L	-	3.1	11
Total Kjeldahl Nitrogen (as N)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	3.1	11
Total Nitrogen (as N)					
Total Nitrogen (as N)	0.2	mg/L	-	3.1	11
Heavy Metals					
Aluminium					
Aluminium	0.05	mg/L	-	0.23	4.4
Aluminium (filtered)					
Aluminium (filtered)	0.05	mg/L	< 0.05	0.20	0.35
Arsenic					
Arsenic	0.001	mg/L	-	< 0.001	0.018
Arsenic (filtered)					
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.014
Cadmium					
Cadmium	0.00005	mg/L	-	< 0.00005	0.00009
Cadmium (filtered)					
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium					
Chromium	0.001	mg/L	-	< 0.001	0.007
Chromium (filtered)					
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper					
Copper	0.001	mg/L	-	< 0.001	0.015
Copper (filtered)					
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Iron					
Iron	0.05	mg/L	-	0.33	8.2
Iron (filtered)					
Iron (filtered)	0.05	mg/L	< 0.05	0.28	1.8
Lead					
Lead	0.001	mg/L	-	< 0.001	0.006
Lead (filtered)					
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese					
Manganese	0.005	mg/L	-	0.019	0.14
Manganese (filtered)					
Manganese (filtered)	0.005	mg/L	< 0.005	0.018	0.11
Mercury					
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001
Mercury (filtered)					
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			QC88	SWL16-1	SWL16-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Ap12361	M16-Ap12362	M16-Ap12363
Date Sampled			Apr 13, 2016	Apr 13, 2016	Apr 13, 2016
Test/Reference	LOR	Unit			
Heavy Metals					
Nickel	0.001	mg/L	-	0.002	0.009
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.006
Selenium	0.001	mg/L	-	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	-	0.005	0.24
Zinc (filtered)	0.001	mg/L	< 0.001	0.006	0.098
Alkali Metals					
Calcium	0.5	mg/L	-	36	110
Magnesium	0.5	mg/L	-	20	47
Potassium	0.5	mg/L	-	27	59
Sodium	0.5	mg/L	-	100	200
Pathogens					
E.coli	1	MPN/100mL	-	1400	13000
Thermotolerant Coliforms	1	MPN/100mL	-	3500	>24000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 14, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Apr 19, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 14, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 14, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 14, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 19, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Apr 19, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 14, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 18, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 14, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 14, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 14, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 14, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 14, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 14, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 14, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 14, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 14, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 14, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 14, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 14, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	104			70-130	Pass		
Chloride	%	111			70-130	Pass		
Phosphate total (as P)	%	101			70-130	Pass		
Sulphate (as S)	%	110			70-130	Pass		
Total Dissolved Solids	%	93			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	94			70-130	Pass		
Nitrite (as N)	%	102			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	97			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	98			80-120	Pass		
Arsenic (filtered)	%	98			80-120	Pass		
Cadmium	%	95			70-130	Pass		
Cadmium (filtered)	%	100			70-130	Pass		
Chromium	%	98			80-120	Pass		
Chromium (filtered)	%	98			80-120	Pass		
Copper	%	99			80-120	Pass		
Copper (filtered)	%	99			80-120	Pass		
Iron	%	102			80-120	Pass		
Iron (filtered)	%	102			80-120	Pass		
Lead	%	98			80-120	Pass		
Lead (filtered)	%	98			80-120	Pass		
Manganese	%	102			80-120	Pass		
Manganese (filtered)	%	102			80-120	Pass		
Mercury	%	94			75-125	Pass		
Mercury (filtered)	%	94			70-130	Pass		
Nickel	%	99			80-120	Pass		
Nickel (filtered)	%	99			80-120	Pass		
Selenium	%	100			80-120	Pass		
Selenium (filtered)	%	100			80-120	Pass		
Zinc	%	100			80-120	Pass		
Zinc (filtered)	%	100			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	108			70-130	Pass		
Potassium	%	92			70-130	Pass		
Sodium	%	96			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ap12345	CP	%	99		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap12345	CP	%	95		70-130	Pass	
Sulphate (as S)	M16-Ap12345	CP	%	98		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	S16-Ap11443	NCP	%	71		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Ap12020	NCP	%	97		70-130	Pass	
Nitrate (as N)	M16-Ap12020	NCP	%	94		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nitrite (as N)	M16-Ap12020	NCP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Ap12624	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Ap11033	NCP	%	91		75-125	Pass	
Arsenic (filtered)	M16-Ap12461	NCP	%	91		70-130	Pass	
Cadmium	S16-Ap14725	NCP	%	97		70-130	Pass	
Chromium	M16-Ap11033	NCP	%	91		75-125	Pass	
Chromium (filtered)	M16-Ap12461	NCP	%	93		70-130	Pass	
Copper (filtered)	M16-Ap12461	NCP	%	92		70-130	Pass	
Iron (filtered)	M16-Ap13272	NCP	%	96		70-130	Pass	
Lead	M16-Ap11033	NCP	%	93		75-125	Pass	
Lead (filtered)	M16-Ap12461	NCP	%	90		70-130	Pass	
Manganese	M16-Ap11033	NCP	%	86		75-125	Pass	
Manganese (filtered)	M16-Ap12461	NCP	%	92		70-130	Pass	
Mercury	M16-Ap11033	NCP	%	99		70-130	Pass	
Mercury (filtered)	M16-Ap13272	NCP	%	94		70-130	Pass	
Nickel	M16-Ap11033	NCP	%	90		75-125	Pass	
Nickel (filtered)	M16-Ap12461	NCP	%	89		70-130	Pass	
Selenium	M16-Ap11033	NCP	%	90		75-125	Pass	
Selenium (filtered)	M16-Ap12461	NCP	%	88		70-130	Pass	
Zinc	M16-Ap11033	NCP	%	82		75-125	Pass	
Zinc (filtered)	M16-Ap12490	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ap12345	CP	%	98		70-130	Pass	
Magnesium	M16-Ap12345	CP	%	97		70-130	Pass	
Potassium	M16-Ap12345	CP	%	88		70-130	Pass	
Sodium	M16-Ap12345	CP	%	107		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	M16-Ap12346	CP	%	96		70-130	Pass	
Iron	M16-Ap12412	NCP	%	83		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap12355	CP	%	108		70-130	Pass	
Phosphate total (as P)	M16-Ap12355	CP	%	88		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap12355	CP	%	105		70-130	Pass	
Sulphate (as S)	M16-Ap12355	CP	%	108		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ap12355	CP	%	98		70-130	Pass	
Magnesium	M16-Ap12355	CP	%	97		70-130	Pass	
Potassium	M16-Ap12355	CP	%	90		70-130	Pass	
Sodium	M16-Ap12355	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	M16-Ap12357	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap12363	CP	%	108		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap12363	CP	%	105		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ap12345	CP	mg/L	480	490	<1	30%	Pass	
Conductivity (at 25°C)	M16-Ap12345	CP	uS/cm	1700	1800	2.0	30%	Pass	
pH	M16-Ap12345	CP	pH Units	8.1	8.2	pass	30%	Pass	
Phosphate total (as P)	M16-Ap12345	CP	mg/L	0.12	0.12	3.0	30%	Pass	
Phosphorus reactive (as P)	M16-Ap12345	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Ap12345	CP	mg/L	13	12	5.8	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Ap12345	CP	mg/L	250	250	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Ap12345	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Ap12345	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Ap13257	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	B16-Ap12434	NCP	mg/L	19	20	1.0	30%	Pass	
Aluminium (filtered)	B16-Ap12336	NCP	mg/L	0.45	0.43	6.0	30%	Pass	
Arsenic	M16-Ap11033	NCP	mg/L	0.002	0.002	16	30%	Pass	
Arsenic (filtered)	M16-Ap12461	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Cadmium	S16-Ap14724	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium (filtered)	M16-Ap12345	CP	mg/L	< 0.00005	0.00083	6.0	30%	Pass	
Chromium	M16-Ap11033	NCP	mg/L	0.002	0.002	6.0	30%	Pass	
Chromium (filtered)	M16-Ap12461	NCP	mg/L	0.002	0.002	8.0	30%	Pass	
Copper (filtered)	M16-Ap12461	NCP	mg/L	0.013	0.014	4.0	30%	Pass	
Iron (filtered)	M16-Ap12461	NCP	mg/L	0.18	0.19	2.0	30%	Pass	
Lead	M16-Ap11033	NCP	mg/L	0.004	0.005	21	30%	Pass	
Lead (filtered)	M16-Ap12461	NCP	mg/L	0.003	0.003	8.0	30%	Pass	
Manganese	M16-Ap11033	NCP	mg/L	0.075	0.076	1.0	30%	Pass	
Manganese (filtered)	M16-Ap12461	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Ap11033	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ap12461	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Ap11033	NCP	mg/L	0.012	0.013	6.0	30%	Pass	
Nickel (filtered)	M16-Ap12461	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Selenium	M16-Ap11033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ap12461	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Ap11033	NCP	mg/L	0.40	0.44	8.0	30%	Pass	
Zinc (filtered)	M16-Ap12461	NCP	mg/L	0.036	0.038	7.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Ap12345	CP	mg/L	63	61	3.0	30%	Pass	
Magnesium	M16-Ap12345	CP	mg/L	38	37	1.0	30%	Pass	
Potassium	M16-Ap12345	CP	mg/L	4.4	4.3	1.0	30%	Pass	
Sodium	M16-Ap12345	CP	mg/L	240	230	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Ap12346	CP	mg/L	1500	1500	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron	M16-Ap11033	NCP	mg/L	0.61	0.62	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M16-Ap12347	CP	mg/L	< 10	< 10	<1	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-Ap12353	CP	NTU	29	27	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ap12355	CP	mg/L	87	87	<1	30%	Pass
Conductivity (at 25°C)	M16-Ap12355	CP	uS/cm	340	340	<1	30%	Pass
pH	M16-Ap12355	CP	pH Units	4.9	4.8	pass	30%	Pass
Phosphate total (as P)	M16-Ap12355	CP	mg/L	0.52	0.51	1.0	30%	Pass
Phosphorus reactive (as P)	M16-Ap12355	CP	mg/L	0.38	0.38	<1	30%	Pass
Sulphate (as S)	M16-Ap12355	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap12355	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ap12355	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap12355	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap12355	CP	mg/L	0.07	0.07	1.0	30%	Pass
Nitrate (as N)	M16-Ap12355	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ap12355	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ap12355	CP	mg/L	4.2	4.1	1.0	30%	Pass
Magnesium	M16-Ap12355	CP	mg/L	6.4	6.5	2.0	30%	Pass
Potassium	M16-Ap12355	CP	mg/L	3.5	3.4	4.0	30%	Pass
Sodium	M16-Ap12355	CP	mg/L	43	43	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap12356	CP	mg/L	20	21	6.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Ap12356	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Ap12357	CP	mg/L	3000	3000	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ap12363	CP	mg/L	410	410	<1	30%	Pass
Phosphorus reactive (as P)	M16-Ap12363	CP	mg/L	0.52	0.57	1.1	30%	Pass
Sulphate (as S)	M16-Ap12363	CP	mg/L	100	100	2.1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 15, 2016 8:38 AM**
Eurofins | mgt reference: **496981**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

TWO SAMPLES LABELLED AS MW41 AND NONE AS MW40, SO SAMPLES LOGGED IN AS MW41A (DARKER COLOUR) AND MW41B (LIGHTER COLOUR). PLEASE ADVISE WHICH SAMPLE IS MW40 AND MW41.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **496981-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Apr 15, 2016

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Ap14151	M16-Ap14152	M16-Ap14153	M16-Ap14154
Date Sampled			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	66	30	11	16
Chloride	1	mg/L	65	79	64	110
Conductivity (at 25°C)	1	uS/cm	270	330	360	460
pH	0.1	pH Units	4.4	5.3	7.2	6.0
Phosphate total (as P)	0.05	mg/L	0.56	0.62	1.7	0.46
Phosphorus reactive (as P)	0.05	mg/L	0.53	0.53	0.07	0.37
Sulphate (as S)	5	mg/L	6.1	6.0	< 5	5.5
Total Dissolved Solids	10	mg/L	^{Q19} 420	^{Q19} 360	240	^{Q19} 330
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	87	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.36	0.28	0.79	0.38
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	12	3.5	1.0	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	12	3.8	1.8	2.0
Total Nitrogen (as N)	0.2	mg/L	12	3.8	1.8	2.0
Heavy Metals						
Aluminium	0.05	mg/L	0.60	4.9	3.7	0.85
Aluminium (filtered)	0.05	mg/L	0.36	0.76	0.24	0.47
Arsenic	0.001	mg/L	< 0.001	0.006	0.004	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.003	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.006	0.006	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	10	7.6	0.27
Iron (filtered)	0.05	mg/L	0.14	3.7	0.15	0.17
Lead	0.001	mg/L	0.001	0.005	0.010	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.010	< 0.005

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-Ap14151	M16-Ap14152	M16-Ap14153	M16-Ap14154
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.009	< 0.005
Mercury	0.0001	mg/L	0.0008	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.007	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	0.008	0.005	0.006
Zinc (filtered)	0.001	mg/L	0.004	0.005	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	9.2	10	33	7.5
Magnesium	0.5	mg/L	6.6	6.0	6.4	7.1
Potassium	0.5	mg/L	18	16	7.6	9.5
Sodium	0.5	mg/L	44	48	37	66

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	MW22 Water
Sample Matrix			M16-Ap14155	M16-Ap14156	M16-Ap14157	M16-Ap14158
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	27	22	33	62
Chloride	1	mg/L	70	28	43	96
Conductivity (at 25°C)	1	uS/cm	260	140	280	430
pH	0.1	pH Units	5.4	3.9	5.2	3.6
Phosphate total (as P)	0.05	mg/L	0.08	0.06	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	16	25
Total Dissolved Solids	10	mg/L	^{Q19} 180	94	^{Q19} 230	270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.03	0.24	0.24
Nitrate (as N)	0.02	mg/L	< 0.02	2.8	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.5	0.9	1.9	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.7	0.9	2.1	1.1
Total Nitrogen (as N)	0.2	mg/L	2.7	3.7	2.1	1.1
Heavy Metals						
Aluminium	0.05	mg/L	60	1.2	2.9	5.0
Aluminium (filtered)	0.05	mg/L	0.66	0.60	1.1	4.1
Arsenic	0.001	mg/L	0.005	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.038	0.003	0.006	0.004

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	MW22 Water
Sample Matrix			M16-Ap14155	M16-Ap14156	M16-Ap14157	M16-Ap14158
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.002	0.003	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	1.2	0.13	0.64	12
Iron (filtered)	0.05	mg/L	0.23	< 0.05	0.27	7.8
Lead	0.001	mg/L	0.013	0.002	0.003	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	< 0.001	< 0.001	0.012
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.010
Selenium	0.001	mg/L	0.002	0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.005	0.004	0.003
Zinc (filtered)	0.001	mg/L	0.008	0.004	0.004	0.003
Alkali Metals						
Calcium	0.5	mg/L	2.4	3.9	7.0	15
Magnesium	0.5	mg/L	5.2	2.5	11	6.6
Potassium	0.5	mg/L	2.1	0.7	5.1	1.5
Sodium	0.5	mg/L	40	19	32	48

Client Sample ID			MW21 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			M16-Ap14159	M16-Ap14160	M16-Ap14161	M16-Ap14162
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	92	61	170	92
Chloride	1	mg/L	78	87	92	70
Conductivity (at 25°C)	1	uS/cm	420	370	390	270
pH	0.1	pH Units	4.1	4.2	3.6	4.4
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	0.10	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	29	13	21	8.9
Total Dissolved Solids	10	mg/L	250	210	250	170
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	0.08	0.20	0.15
Nitrate (as N)	0.02	mg/L	0.04	< 0.02	0.18	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.7	1.0	2.1	0.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9	1.1	2.3	0.8
Total Nitrogen (as N)	0.2	mg/L	1.9	1.1	2.5	0.8

Client Sample ID			MW21 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			M16-Ap14159	M16-Ap14160	M16-Ap14161	M16-Ap14162
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	30	25	43	18
Aluminium (filtered)	0.05	mg/L	4.7	6.8	10	1.3
Arsenic	0.001	mg/L	0.002	0.004	0.005	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.021	0.018	0.055	0.019
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.004	0.008	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	23	3.0	1.1	6.2
Iron (filtered)	0.05	mg/L	19	1.1	< 0.05	1.4
Lead	0.001	mg/L	0.015	0.026	0.060	0.027
Lead (filtered)	0.001	mg/L	0.003	0.007	0.002	0.005
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	0.0002	0.0007	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.009	0.011	0.019	0.006
Nickel (filtered)	0.001	mg/L	0.006	0.007	0.008	0.003
Selenium	0.001	mg/L	0.002	0.002	0.006	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.008	0.003	0.020	0.007
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.011	0.007
Alkali Metals						
Calcium	0.5	mg/L	5.9	< 0.5	0.9	3.6
Magnesium	0.5	mg/L	6.5	4.3	3.4	4.5
Potassium	0.5	mg/L	1.2	0.5	< 0.5	1.4
Sodium	0.5	mg/L	44	49	52	42

Client Sample ID			MW17 Water	MW16 Water	MW41A Water	MW41B Water
Sample Matrix			M16-Ap14163	M16-Ap14164	M16-Ap14165	M16-Ap14166
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	27	48	110	23
Chloride	1	mg/L	44	81	170	77
Conductivity (at 25°C)	1	uS/cm	220	380	710	280
pH	0.1	pH Units	4.2	4.4	3.5	4.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.56	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.54	< 0.05
Sulphate (as S)	5	mg/L	12	11	9.0	< 5
Total Dissolved Solids	10	mg/L	130	210	^{Q19} 650	^{Q19} 230
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10

Client Sample ID			MW17 Water	MW16 Water	MW41A Water	MW41B Water
Sample Matrix			M16-Ap14163	M16-Ap14164	M16-Ap14165	M16-Ap14166
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.35	0.42
Nitrate (as N)	0.02	mg/L	0.05	7.1	0.70	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	1.6	5.8	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	1.6	6.2	1.7
Total Nitrogen (as N)	0.2	mg/L	1.1	8.7	6.9	1.7
Heavy Metals						
Aluminium	0.05	mg/L	5.8	5.7	1.8	1.4
Aluminium (filtered)	0.05	mg/L	1.2	5.4	1.5	1.2
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00008	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00007	< 0.00005
Chromium	0.001	mg/L	0.012	0.005	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Iron	0.05	mg/L	5.8	1.1	0.58	0.33
Iron (filtered)	0.05	mg/L	0.55	0.30	0.39	0.30
Lead	0.001	mg/L	0.035	0.008	0.002	< 0.001
Lead (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.003	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.003	0.013	0.005
Zinc (filtered)	0.001	mg/L	0.004	0.003	0.012	0.002
Alkali Metals						
Calcium	0.5	mg/L	5.3	14	5.2	2.1
Magnesium	0.5	mg/L	4.4	8.4	12	5.4
Potassium	0.5	mg/L	1.2	1.7	1.9	2.0
Sodium	0.5	mg/L	25	38	88	42

Client Sample ID			SWL17-1 Water	SWL17-2 Water	SWL17-3 Water	QC94 Water
Sample Matrix			M16-Ap14167	M16-Ap14168	M16-Ap14169	M16-Ap14170
Eurofins mgt Sample No.			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	39	39	37	54
Chloride	1	mg/L	76	76	76	74
Conductivity (at 25°C)	1	uS/cm	350	350	350	270
pH	0.1	pH Units	3.9	3.9	3.9	4.4
Phosphate total (as P)	0.05	mg/L	0.11	0.11	0.11	< 0.05

Client Sample ID			SWL17-1	SWL17-2	SWL17-3	QC94
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Ap14167	M16-Ap14168	M16-Ap14169	M16-Ap14170
Date Sampled			Apr 14, 2016	Apr 14, 2016	Apr 14, 2016	Apr 14, 2016
Test/Reference	LOR	Unit				
Phosphorus reactive (as P)	0.05	mg/L	0.07	< 0.05	0.07	< 0.05
Sulphate (as S)	5	mg/L	7.1	6.5	6.8	8.5
Total Dissolved Solids	10	mg/L	^{Q19} 280	^{Q19} 270	^{Q19} 270	170
Turbidity	1	NTU	54	20	9.3	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.11	0.07	0.16	0.18
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.8	3.9	2.9	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.9	4.0	3.1	< 0.2
Total Nitrogen (as N)	0.2	mg/L	2.9	4.0	3.1	< 0.2
Heavy Metals						
Aluminium	0.05	mg/L	0.57	0.56	0.49	19
Aluminium (filtered)	0.05	mg/L	0.47	0.51	0.45	4.4
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.021
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.30	0.31	0.30	6.3
Iron (filtered)	0.05	mg/L	0.24	0.23	0.24	2.4
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.027
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.006
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.008	0.004	0.005
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.003	0.005
Alkali Metals						
Calcium	0.5	mg/L	3.1	3.0	2.9	3.7
Magnesium	0.5	mg/L	8.0	8.1	7.6	4.5
Potassium	0.5	mg/L	1.4	1.4	1.6	1.5
Sodium	0.5	mg/L	43	44	42	42
Pathogens						
E.coli	1	MPN/100mL	10	^{M15} <10	^{M15} <10	-
Thermotolerant Coliforms	1	MPN/100mL	74	20	430	-

Client Sample ID			QC93	QC92
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Ap14171	M16-Ap14172
Date Sampled			Apr 14, 2016	Apr 14, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 18, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Apr 21, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 18, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 18, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 15, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 21, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Apr 21, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 15, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 21, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 18, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 15, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 15, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 15, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 15, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 15, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 15, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 15, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 15, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 15, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	106			70-130	Pass		
Chloride	%	103			70-130	Pass		
Phosphate total (as P)	%	102			70-130	Pass		
Sulphate (as S)	%	117			70-130	Pass		
Total Dissolved Solids	%	96			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	114			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	94			80-120	Pass		
Cadmium (filtered)	%	94			70-130	Pass		
Chromium	%	95			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	94			80-120	Pass		
Copper (filtered)	%	94			80-120	Pass		
Iron	%	100			80-120	Pass		
Iron (filtered)	%	100			80-120	Pass		
Lead	%	95			80-120	Pass		
Lead (filtered)	%	95			80-120	Pass		
Manganese	%	95			80-120	Pass		
Manganese (filtered)	%	95			80-120	Pass		
Mercury	%	91			75-125	Pass		
Mercury (filtered)	%	91			70-130	Pass		
Nickel	%	94			80-120	Pass		
Nickel (filtered)	%	94			80-120	Pass		
Selenium	%	101			80-120	Pass		
Selenium (filtered)	%	101			80-120	Pass		
Zinc	%	94			80-120	Pass		
Zinc (filtered)	%	94			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	97			70-130	Pass		
Magnesium	%	105			70-130	Pass		
Potassium	%	90			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap14151	CP	%	99		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap14151	CP	%	127		70-130	Pass	
Sulphate (as S)	M16-Ap14151	CP	%	101		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
Total Kjeldahl Nitrogen (as N)	M16-Ap13337	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Ap14646	NCP	%	91		75-125	Pass	
Arsenic (filtered)	M16-Ap13251	NCP	%	98		70-130	Pass	
Cadmium (filtered)	S16-Ap15539	NCP	%	84		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Chromium	M16-Ap14646	NCP	%	89		75-125	Pass	
Chromium (filtered)	M16-Ap13251	NCP	%	97		70-130	Pass	
Copper	M16-Ap14646	NCP	%	88		75-125	Pass	
Copper (filtered)	M16-Ap13251	NCP	%	94		70-130	Pass	
Iron (filtered)	M16-Ap13251	NCP	%	94		70-130	Pass	
Lead	M16-Ap14646	NCP	%	89		75-125	Pass	
Lead (filtered)	M16-Ap13251	NCP	%	98		70-130	Pass	
Manganese	M16-Ap14646	NCP	%	85		75-125	Pass	
Manganese (filtered)	M16-Ap14537	NCP	%	90		70-130	Pass	
Mercury	M16-Ap14646	NCP	%	100		70-130	Pass	
Mercury (filtered)	M16-Ap13251	NCP	%	95		70-130	Pass	
Nickel	M16-Ap14646	NCP	%	87		75-125	Pass	
Nickel (filtered)	M16-Ap13251	NCP	%	91		70-130	Pass	
Selenium	M16-Ap14646	NCP	%	99		75-125	Pass	
Selenium (filtered)	M16-Ap13251	NCP	%	101		70-130	Pass	
Zinc	M16-Ap14646	NCP	%	83		75-125	Pass	
Zinc (filtered)	M16-Ap13251	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Ap14152	CP	%	92		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ap14152	CP	%	93		70-130	Pass	
Magnesium	M16-Ap14152	CP	%	94		70-130	Pass	
Potassium	M16-Ap14152	CP	%	84		70-130	Pass	
Sodium	M16-Ap14152	CP	%	93		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ap14155	CP	%	105		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap14160	CP	%	99		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap14160	CP	%	101		70-130	Pass	
Sulphate (as S)	M16-Ap14160	CP	%	99		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Ap14160	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-Ap14160	CP	%	90		70-130	Pass	
Nitrite (as N)	M16-Ap14160	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Ap14162	CP	%	95		70-130	Pass	
Magnesium	M16-Ap14162	CP	%	101		70-130	Pass	
Potassium	M16-Ap14162	CP	%	85		70-130	Pass	
Sodium	M16-Ap14162	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Ap14164	CP	%	106		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Ap14170	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-Ap14170	CP	%	87		70-130	Pass	
Nitrite (as N)	M16-Ap14170	CP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ap14151	CP	mg/L	65	64	2.3	30%	Pass	
Conductivity (at 25°C)	M16-Ap14151	CP	uS/cm	270	270	<1	30%	Pass	
pH	M16-Ap14151	CP	pH Units	4.4	4.4	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Ap14151	CP	mg/L	0.53	0.53	<1	30%	Pass	
Sulphate (as S)	M16-Ap14151	CP	mg/L	6.1	6.4	4.2	30%	Pass	
Total Dissolved Solids	M16-Ap14151	CP	mg/L	420	400	3.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Ap14151	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Ap14151	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Ap14151	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Ap13337	NCP	mg/L	7.6	6.8	12	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Ap14646	NCP	mg/L	0.001	0.001	3.0	30%	Pass	
Arsenic (filtered)	M16-Ap13251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S16-Ap15538	NCP	mg/L	0.0003	0.0003	<1	30%	Pass	
Chromium	M16-Ap14646	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Ap13251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Ap14646	NCP	mg/L	0.004	0.004	6.0	30%	Pass	
Copper (filtered)	M16-Ap13251	NCP	mg/L	0.004	0.004	3.0	30%	Pass	
Iron	M16-Ap14646	NCP	mg/L	0.37	0.33	10	30%	Pass	
Iron (filtered)	M16-Ap13251	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Ap14646	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Ap13251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Ap14646	NCP	mg/L	0.030	0.029	5.0	30%	Pass	
Manganese (filtered)	M16-Ap14537	NCP	mg/L	0.27	0.26	5.0	30%	Pass	
Mercury	M16-Ap14646	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Ap13251	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Ap14646	NCP	mg/L	0.003	0.003	9.0	30%	Pass	
Nickel (filtered)	M16-Ap13251	NCP	mg/L	0.025	0.024	2.0	30%	Pass	
Selenium	M16-Ap14646	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Ap13251	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Ap14646	NCP	mg/L	0.026	0.024	7.0	30%	Pass	
Zinc (filtered)	M16-Ap13251	NCP	mg/L	0.026	0.025	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Ap14152	CP	mg/L	360	360	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Ap14152	CP	mg/L	10	10	<1	30%	Pass	
Magnesium	M16-Ap14152	CP	mg/L	6.0	5.8	3.0	30%	Pass	
Potassium	M16-Ap14152	CP	mg/L	16	14	9.0	30%	Pass	
Sodium	M16-Ap14152	CP	mg/L	48	46	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Ap14155	CP	mg/L	0.08	0.09	3.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ap14160	CP	mg/L	87	87	<1	30%	Pass
Phosphorus reactive (as P)	M16-Ap14160	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ap14160	CP	mg/L	13	13	3.2	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap14160	CP	mg/L	0.08	0.08	1.0	30%	Pass
Nitrate (as N)	M16-Ap14160	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ap14160	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Ap14161	CP	uS/cm	390	490	1.0	30%	Pass
pH	M16-Ap14161	CP	pH Units	3.6	3.6	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap14161	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Ap14161	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap14161	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Ap14162	CP	mg/L	3.6	3.6	1.0	30%	Pass
Magnesium	M16-Ap14162	CP	mg/L	4.5	4.4	1.0	30%	Pass
Potassium	M16-Ap14162	CP	mg/L	1.4	1.5	6.0	30%	Pass
Sodium	M16-Ap14162	CP	mg/L	42	41	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap14163	CP	mg/L	27	28	5.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap14164	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	S16-Ap12866	NCP	NTU	1.9	1.9	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap14170	CP	mg/L	0.18	0.15	17	30%	Pass
Nitrate (as N)	M16-Ap14170	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ap14170	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 18, 2016 8:37 AM**
Eurofins | mgt reference: **497204**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **497204-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Apr 18, 2016**

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-Ap15574	M16-Ap15575	M16-Ap15576	M16-Ap15577
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	14	25	45	1400
Chloride	1	mg/L	60	44	76	18
Conductivity (at 25°C)	1	uS/cm	270	180	380	170
pH	0.1	pH Units	4.5	4.1	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	5.5	< 5	13	6.5
Total Dissolved Solids	10	mg/L	160	160	Q19300	110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.10	0.19	0.29	0.05
Nitrate (as N)	0.02	mg/L	3.2	< 0.02	0.03	8.5
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	0.5	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.8	0.7	0.6
Total Nitrogen (as N)	0.2	mg/L	3.2	0.8	0.7	9.1
Heavy Metals						
Aluminium	0.05	mg/L	0.52	0.49	4.2	4.9
Aluminium (filtered)	0.05	mg/L	0.52	0.44	1.8	1.3
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.007	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.004	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.36	1.5	0.47
Iron (filtered)	0.05	mg/L	< 0.05	0.14	0.61	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.004	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-Ap15574	M16-Ap15575	M16-Ap15576	M16-Ap15577
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.005	0.003	0.003
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	2.7	2.6	6.8	7.6
Magnesium	0.5	mg/L	8.3	6.2	11	7.5
Potassium	0.5	mg/L	3.2	3.4	1.7	3.0
Sodium	0.5	mg/L	37	17	49	14

Client Sample ID			MW24 Water	MW23 Water	MW15 Water	MW14 Water
Sample Matrix			M16-Ap15578	M16-Ap15579	M16-Ap15580	M16-Ap15581
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	1600	< 10	25	22
Chloride	1	mg/L	150	30	40	36
Conductivity (at 25°C)	1	uS/cm	630	170	250	240
pH	0.1	pH Units	4.5	6.4	4.0	4.4
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	0.11	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	19	6.5	18	9.6
Total Dissolved Solids	10	mg/L	390	110	^{Q19} 170	^{Q19} 210
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.31	< 0.01	0.28	0.01
Nitrate (as N)	0.02	mg/L	0.06	4.2	< 0.02	1.7
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	< 0.2	< 0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	< 0.2	0.3	< 0.2
Total Nitrogen (as N)	0.2	mg/L	1.3	4.2	0.3	1.7
Heavy Metals						
Aluminium	0.05	mg/L	12	5.5	11	7.8
Aluminium (filtered)	0.05	mg/L	1.1	0.11	0.53	0.57
Arsenic	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00006	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00005	< 0.00005
Chromium	0.001	mg/L	0.022	0.004	0.019	0.012

Client Sample ID			MW24 Water	MW23 Water	MW15 Water	MW14 Water
Sample Matrix			M16-Ap15578	M16-Ap15579	M16-Ap15580	M16-Ap15581
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.007	0.002	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.4	0.38	8.2	2.1
Iron (filtered)	0.05	mg/L	0.27	< 0.05	0.42	0.47
Lead	0.001	mg/L	0.014	0.003	0.025	0.012
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.003
Manganese	0.005	mg/L	0.007	0.006	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.002	0.002	0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.006	0.006	0.015	0.003
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.014	0.002
Alkali Metals						
Calcium	0.5	mg/L	7.0	9.6	5.0	7.9
Magnesium	0.5	mg/L	16	1.9	7.2	5.0
Potassium	0.5	mg/L	1.8	2.7	1.5	0.7
Sodium	0.5	mg/L	95	17	22	20

Client Sample ID			MW13 Water	MW12 Water	MW11 Water	MW9 Water
Sample Matrix			M16-Ap15582	M16-Ap15583	M16-Ap15584	M16-Ap15585
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	32	24	46	30
Chloride	1	mg/L	44	41	120	19
Conductivity (at 25°C)	1	uS/cm	230	190	750	130
pH	0.1	pH Units	4.0	4.3	3.9	5.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.36
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	12	8.6	48	5.2
Total Dissolved Solids	10	mg/L	140	120	410	^{Q19} 130
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.02	0.12	0.11
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	0.37
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	< 0.2	1.4
Total Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	< 0.2	1.8

Client Sample ID			MW13 Water	MW12 Water	MW11 Water	MW9 Water
Sample Matrix			M16-Ap15582	M16-Ap15583	M16-Ap15584	M16-Ap15585
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016	Apr 15, 2016	Apr 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	8.0	3.1	7.0	85
Aluminium (filtered)	0.05	mg/L	1.7	2.4	3.5	0.34
Arsenic	0.001	mg/L	0.003	0.002	0.002	0.010
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.009	0.001	0.007	0.082
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.001	0.022
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Iron	0.05	mg/L	8.6	1.9	10	8.1
Iron (filtered)	0.05	mg/L	0.74	0.39	2.2	0.23
Lead	0.001	mg/L	0.007	< 0.001	0.012	0.12
Lead (filtered)	0.001	mg/L	0.001	< 0.001	0.006	0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.014
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	0.0008
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.004	0.008	0.018
Nickel (filtered)	0.001	mg/L	0.003	0.003	0.007	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.006
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.004	0.003	0.008	0.059
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.004	0.017
Alkali Metals						
Calcium	0.5	mg/L	5.0	< 0.5	3.2	7.0
Magnesium	0.5	mg/L	5.4	2.9	30	2.0
Potassium	0.5	mg/L	1.1	< 0.5	0.9	1.4
Sodium	0.5	mg/L	28	19	85	12

Client Sample ID			QC95 Water	QC96 Water
Sample Matrix			M16-Ap15586	M16-Ap15587
Eurofins mgt Sample No.			Apr 15, 2016	Apr 15, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 19, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	Apr 22, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 19, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 19, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 18, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 22, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	Apr 22, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 18, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 19, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 19, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 19, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 19, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 19, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 19, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 18, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 27, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Apr 18, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 18, 2016	180 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	103			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Chloride	%	97	70-130	Pass			
Phosphate total (as P)	%	103	70-130	Pass			
Sulphate (as S)	%	104	70-130	Pass			
Total Dissolved Solids	%	96	70-130	Pass			
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	97	70-130	Pass			
Nitrate (as N)	%	93	70-130	Pass			
Nitrite (as N)	%	101	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	106	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Arsenic	%	88	80-120	Pass			
Arsenic (filtered)	%	100	80-120	Pass			
Cadmium	%	90	70-130	Pass			
Cadmium (filtered)	%	94	70-130	Pass			
Chromium	%	90	80-120	Pass			
Chromium (filtered)	%	99	80-120	Pass			
Copper	%	86	80-120	Pass			
Copper (filtered)	%	97	80-120	Pass			
Iron	%	85	80-120	Pass			
Iron (filtered)	%	100	80-120	Pass			
Lead	%	90	80-120	Pass			
Lead (filtered)	%	99	80-120	Pass			
Manganese	%	88	80-120	Pass			
Manganese (filtered)	%	99	80-120	Pass			
Mercury	%	86	75-125	Pass			
Mercury (filtered)	%	85	70-130	Pass			
Nickel	%	87	80-120	Pass			
Nickel (filtered)	%	97	80-120	Pass			
Selenium	%	87	80-120	Pass			
Selenium (filtered)	%	108	80-120	Pass			
Zinc	%	88	80-120	Pass			
Zinc (filtered)	%	98	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	92	70-130	Pass			
Magnesium	%	103	70-130	Pass			
Potassium	%	87	70-130	Pass			
Sodium	%	91	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic	M16-Ap15567	NCP	%	98	75-125	Pass	
Arsenic (filtered)	M16-Ap15563	NCP	%	95	70-130	Pass	
Cadmium	M16-Ap16256	NCP	%	86	70-130	Pass	
Cadmium (filtered)	S16-Ap15539	NCP	%	84	70-130	Pass	
Chromium	M16-Ap15567	NCP	%	97	75-125	Pass	
Chromium (filtered)	M16-Ap15563	NCP	%	95	70-130	Pass	
Copper	M16-Ap15567	NCP	%	95	75-125	Pass	
Copper (filtered)	M16-Ap15563	NCP	%	94	70-130	Pass	
Iron	M16-Ap17826	NCP	%	88	75-125	Pass	
Iron (filtered)	M16-Ap16785	NCP	%	83	70-130	Pass	
Lead	M16-Ap15567	NCP	%	100	75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	M16-Ap15563	NCP	%	96			70-130	Pass	
Manganese	M16-Ap15567	NCP	%	95			75-125	Pass	
Manganese (filtered)	M16-Ap15563	NCP	%	93			70-130	Pass	
Mercury	M16-Ap15567	NCP	%	92			70-130	Pass	
Mercury (filtered)	M16-Ap15563	NCP	%	76			70-130	Pass	
Nickel	M16-Ap15567	NCP	%	95			75-125	Pass	
Nickel (filtered)	M16-Ap15563	NCP	%	92			70-130	Pass	
Selenium	B16-Ap15464	NCP	%	86			75-125	Pass	
Selenium (filtered)	M16-Ap15563	NCP	%	93			70-130	Pass	
Zinc	M16-Ap15567	NCP	%	93			75-125	Pass	
Zinc (filtered)	M16-Ap15563	NCP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Ap15578	CP	%	100			70-130	Pass	
Phosphorus reactive (as P)	M16-Ap15578	CP	%	95			70-130	Pass	
Sulphate (as S)	M16-Ap15578	CP	%	88			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Ap15579	CP	%	94			70-130	Pass	
Magnesium	M16-Ap15579	CP	%	103			70-130	Pass	
Potassium	M16-Ap15579	CP	%	90			70-130	Pass	
Sodium	M16-Ap15579	CP	%	96			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Ap15582	CP	%	94			70-130	Pass	
Nitrate (as N)	M16-Ap15582	CP	%	89			70-130	Pass	
Nitrite (as N)	M16-Ap15582	CP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Ap15584	CP	%	100			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Ap15585	CP	%	76			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Ap15574	CP	uS/cm	270	270	2.0	30%	Pass	
pH	M16-Ap15574	CP	pH Units	4.5	4.6	pass	30%	Pass	
Total Dissolved Solids	B16-Ap15341	NCP	mg/L	1700	1600	8.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Ap15574	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Ap15574	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Ap15574	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Ap15567	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Arsenic (filtered)	M16-Ap16785	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Ap16255	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium (filtered)	S16-Ap15538	NCP	mg/L	0.0003	0.0003	<1	30%	Pass	
Chromium	M16-Ap15567	NCP	mg/L	0.003	0.003	1.0	30%	Pass	
Chromium (filtered)	M16-Ap16785	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Ap15567	NCP	mg/L	0.003	0.003	13	30%	Pass	
Copper (filtered)	M16-Ap16785	NCP	mg/L	0.023	0.023	2.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Iron	M16-Ap15567	NCP	mg/L	0.43	0.43	1.0	30%	Pass
Iron (filtered)	M16-Ap16785	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Ap15567	NCP	mg/L	0.001	0.001	3.0	30%	Pass
Lead (filtered)	M16-Ap16785	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Ap15567	NCP	mg/L	0.008	0.008	3.0	30%	Pass
Manganese (filtered)	M16-Ap16785	NCP	mg/L	0.017	0.018	3.0	30%	Pass
Mercury	M16-Ap15567	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Ap16785	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Ap15567	NCP	mg/L	0.002	0.002	4.0	30%	Pass
Nickel (filtered)	M16-Ap16785	NCP	mg/L	0.005	0.005	2.0	30%	Pass
Selenium	B16-Ap15464	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Ap16785	NCP	mg/L	0.002	0.002	15	30%	Pass
Zinc	M16-Ap15567	NCP	mg/L	0.031	0.030	2.0	30%	Pass
Zinc (filtered)	M16-Ap16785	NCP	mg/L	0.035	0.034	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap15575	CP	mg/L	25	26	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Ap15578	CP	mg/L	150	150	1.3	30%	Pass
Phosphorus reactive (as P)	M16-Ap15578	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Ap15578	CP	mg/L	19	20	1.4	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Ap15581	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Ap15582	CP	mg/L	0.08	0.08	4.0	30%	Pass
Nitrate (as N)	M16-Ap15582	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Ap15582	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Ap15584	CP	mg/L	46	46	<1	30%	Pass
Phosphate total (as P)	M16-Ap15584	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Ap15585	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Ap17826	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CERTIFICATE OF ANALYSIS

Work Order : **EP1603258**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090

Telephone : 08 9209 7655
Date Samples Received : 13-Apr-2016 16:05
Date Analysis Commenced : 13-Apr-2016
Issue Date : 20-Apr-2016 14:16



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

- EG093: Samples were run on EG094 method due to low TDS content.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC89	QC90	QC91	----	----
Client sampling date / time				[13-Apr-2016]	[13-Apr-2016]	[13-Apr-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1603258-001	EP1603258-002	EP1603258-003	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.69	8.14	7.88	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2550	2520	1920	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2150	2520	1200	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	214	192	205	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	214	192	205	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	6	38	31	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	745	727	514	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	88	72	65	----	----	
Magnesium	7439-95-4	1	mg/L	54	48	40	----	----	
Sodium	7440-23-5	1	mg/L	324	351	249	----	----	
Potassium	7440-09-7	1	mg/L	8	6	6	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.02	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	<0.001	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.002	----	----	
Manganese	7439-96-5	0.001	mg/L	0.007	0.076	0.005	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	0.28	0.10	<0.05	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	10.6	10.8	10.6	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.038	----	----	
Chromium	7440-47-3	0.001	mg/L	0.023	0.028	0.021	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC89	QC90	QC91	----	----
Client sampling date / time				[13-Apr-2016]	[13-Apr-2016]	[13-Apr-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1603258-001	EP1603258-002	EP1603258-003	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Copper	7440-50-8	0.001	mg/L	0.023	0.004	0.003	----	----	
Lead	7439-92-1	0.001	mg/L	0.021	0.015	0.022	----	----	
Manganese	7439-96-5	0.001	mg/L	0.029	0.120	0.011	----	----	
Nickel	7440-02-0	0.001	mg/L	0.024	0.014	0.032	----	----	
Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.02	----	----	
Zinc	7440-66-6	0.005	mg/L	0.044	0.018	0.006	----	----	
Iron	7439-89-6	0.05	mg/L	18.6	7.01	56.9	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS									
Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	<0.2	----	----	
EG093T: Total Metals in Saline Water by ORC-ICPMS									
Cadmium	7440-43-9	0.2	µg/L	<0.2	0.2	<0.2	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.48	0.19	0.26	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.03	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.04	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.1	0.6	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.3	1.1	0.6	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.19	0.38	0.14	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.06	0.07	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	25.4	25.1	19.2	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC89	QC90	QC91	----	----
Client sampling date / time					[13-Apr-2016]	[13-Apr-2016]	[13-Apr-2016]	----	----
Compound	CAS Number	LOR	Unit		EP1603258-001	EP1603258-002	EP1603258-003	-----	-----
					Result	Result	Result	----	----
EN055: Ionic Balance - Continued									
Total Cations	----	0.01	meq/L		23.1	23.0	17.5	----	----
Ionic Balance	----	0.01	%		4.70	4.52	4.69	----	----

QUALITY CONTROL REPORT

Work Order	: EP1603258	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 13-Apr-2016
Order number	: ----	Date Analysis Commenced	: 13-Apr-2016
C-O-C number	: ----	Issue Date	: 20-Apr-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 424359)									
EP1603244-018	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.36	8.31	0.600	0% - 20%
EP1603244-011	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.56	7.67	1.44	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 424361)									
EP1603267-008	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1250	1260	1.27	0% - 20%
EP1603267-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	269	258	4.19	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 423993)									
EP1603258-001	QC89	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2150	2140	0.326	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 424360)									
EP1603267-008	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	282	289	2.30	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	32	35	11.1	0% - 20%
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	314	324	3.22	0% - 20%
EP1603267-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	105	93	12.5	0% - 20%
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	105	93	12.5	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 423469)									
EP1603258-001	QC89	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	6	6	0.00	No Limit
EP1603258-002	QC90	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	38	38	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 423472)									
EP1603258-001	QC89	ED045G: Chloride	16887-00-6	1	mg/L	745	736	1.22	0% - 20%
EP1603258-002	QC90	ED045G: Chloride	16887-00-6	1	mg/L	727	723	0.549	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 423915)									
EP1603258-001	QC89	ED093F: Calcium	7440-70-2	1	mg/L	88	88	0.00	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
ED093F: Dissolved Major Cations (QC Lot: 423915) - continued											
EP1603258-001	QC89	ED093F: Magnesium	7439-95-4	1	mg/L	54	54	0.00	0% - 20%		
		ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.00	No Limit		
		ED093F: Sodium	7440-23-5	1	mg/L	324	321	0.651	0% - 20%		
EG020F: Dissolved Metals by ICP-MS (QC Lot: 426397)											
EP1603258-001	QC89	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.00	No Limit		
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.007	0.007	0.00	No Limit		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit		
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit		
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
ES1608121-037	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	0.28	0.27	4.67	No Limit		
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.352	0.367	4.28	0% - 20%		
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit		
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.013	0.011	12.0	No Limit		
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
EP1603258-001	QC89	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
		EG020A-F: Iron	7439-89-6	0.05	mg/L	25.6	24.4	4.49	0% - 20%		
		EG020T: Total Metals by ICP-MS (QC Lot: 425772)									
		EP1603258-001	QC89	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.008	0.00	No Limit
				EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.023	0.027	13.7	0% - 20%
				EG020A-T: Copper	7440-50-8	0.001	mg/L	0.023	0.022	0.00	0% - 20%
				EG020A-T: Lead	7439-92-1	0.001	mg/L	0.021	0.021	0.00	0% - 20%
				EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.029	0.030	4.61	0% - 20%
				EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.024	0.022	7.17	0% - 20%
EG020A-T: Zinc	7440-66-6			0.005	mg/L	0.044	0.046	5.77	No Limit		
EG020A-T: Aluminium	7429-90-5			0.01	mg/L	10.6	11.2	5.93	0% - 20%		
EG020A-T: Selenium	7782-49-2			0.01	mg/L	0.01	0.01	0.00	No Limit		
EP1603174-006	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	18.6	19.4	4.19	0% - 20%		
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	0.002	0.00	No Limit		
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit		
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit				



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 425772) - continued									
EP1603174-006	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.010	0.013	18.2	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 426396)									
EP1603258-003	QC91	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1608011-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 425779)									
EP1603258-001	QC89	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 426461)									
ES1608157-003	Anonymous	EG093A-F: Cadmium	7440-43-9	0.2	µg/L	<0.1	<0.1	0.00	No Limit
EM1604068-009	Anonymous	EG093A-F: Cadmium	7440-43-9	0.2	µg/L	<0.1	<0.1	0.00	No Limit
EG093T: Total Metals in Saline Water by ORC-ICPMS (QC Lot: 426475)									
EP1603258-001	QC89	EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 423454)									
EP1603258-001	QC89	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.48	0.48	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 423471)									
EP1603258-001	QC89	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1603258-002	QC90	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 423455)									
EP1603258-001	QC89	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 423896)									
EP1603248-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.4	1.8	25.7	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 423895)									
EP1603248-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.10	<0.10	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 423470)									
EP1603258-001	QC89	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.04	0.00	No Limit
EP1603258-002	QC90	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.05	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 424359)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 424361)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.2	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 423993)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.3	83	111	
				<10	293 mg/L	114	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 424360)									
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	93.6	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 423469)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	105	89	113	
				<1	100 mg/L	92.1	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 423472)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	105	84	120	
				<1	1000 mg/L	107	84	110	
ED093F: Dissolved Major Cations (QCLot: 423915)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	95.1	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	94.2	90	108	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	94.5	90	110	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.8	87	111	
EG020F: Dissolved Metals by ICP-MS (QCLot: 426397)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	95.3	80	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.3	85	114	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	93.4	85	111	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.3	81	111	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.4	83	111	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.8	82	110	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.7	82	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	86.3	85	115	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 426397) - continued								
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.7	81	117
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	93.7	82	112
EG020T: Total Metals by ICP-MS (QCLot: 425772)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	90.3	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.6	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	108	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.1	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	99.2	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.3	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.8	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.7	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	105	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.9	81	103
EG035F: Dissolved Mercury by FIMS (QCLot: 426396)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	83	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 425779)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	106	87	115
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 426461)								
EG093A-F: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	87.4	69	117
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 426475)								
EG093A-T: Cadmium	7440-43-9	0.2	µg/L	<0.2	10 µg/L	97.1	82	122
EK055G: Ammonia as N by Discrete Analyser (QCLot: 423454)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	104	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 423471)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.4	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 423455)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 423896)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.8	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 423895)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	77.8	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 423470)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	95.0	87	115

Matrix Spike (MS) Report



The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
				Low	High		
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 423469)							
EP1603258-003	QC91	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	113	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 423472)							
EP1603258-003	QC91	ED045G: Chloride	16887-00-6	1000 mg/L	119	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 426397)							
EP1603258-002	QC90	EG020A-F: Arsenic	7440-38-2	1 mg/L	95.5	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	91.7	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	92.4	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	91.5	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	80.9	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	82.5	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	91.0	70	130
EG020T: Total Metals by ICP-MS (QCLot: 425772)							
EP1603258-002	QC90	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.6	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	106	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	97.2	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	93.6	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	98.8	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	92.2	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 426396)							
EM1603957-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	83.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 425779)							
EP1603258-002	QC90	EG035T: Mercury	7439-97-6	0.01 mg/L	93.2	70	130
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 426461)							
EM1604068-017	Anonymous	EG093A-F: Cadmium	7440-43-9	12.5 µg/L	82.3	70	130
EG093T: Total Metals in Saline Water by ORC-ICPMS (QCLot: 426475)							
EP1603258-002	QC90	EG093A-T: Cadmium	7440-43-9	12.5 µg/L	98.0	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 423454)							
EP1603258-002	QC90	EK055G: Ammonia as N	7664-41-7	1 mg/L	115	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 423471)							
EP1603258-003	QC91	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	118	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 423455)							
EP1603258-002	QC90	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	110	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 423896)							
EP1603248-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	96.9	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 423895)							
EP1603248-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.2	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 423470)							
EP1603258-003	QC91	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	112	70	130

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 3, 2016 8:36 AM**
Eurofins | mgt reference: **498878**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QC97 AND QC98 EXTRA SAMPLES RECEIVED PLACED ON HOLD

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
 89-91 Burswood Road
 Burswood
 WA 6100



NATA Accredited
 Accreditation Number 1261
 Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **498878-W**
 Project name NL_BASELINE_SW MONITORING
 Project ID ENAUPERT04483AA
 Received Date May 03, 2016

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M16-My01247	M16-My01248	M16-My01249	M16-My01250
Eurofins mgt Sample No.			May 02, 2016	May 02, 2016	May 02, 2016	May 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	89	97	90	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity & Chloride						
Acidity (as CaCO3)	10	mg/L	45	66	33	23
Chloride	1	mg/L	46	23	13	12
Conductivity & Nitrate						
Conductivity (at 25°C)	1	uS/cm	180	210	120	85
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	1.6	1.3
pH						
pH	0.1	pH Units	4.7	5.4	4.4	5.8
Phosphate & Phosphorus						
Phosphate total (as P)	0.05	mg/L	0.06	0.12	0.12	0.14
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate & Solids						
Sulphate (as S)	5	mg/L	< 5	17	15	< 5
Total Dissolved Solids	10	mg/L	Q19160	Q19150	Q1983	Q1981

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M16-My01247	M16-My01248	M16-My01249	M16-My01250
Eurofins mgt Sample No.			May 02, 2016	May 02, 2016	May 02, 2016	May 02, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.83	0.66	0.22	< 0.01
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	1.6	1.3
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.8	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.2	1.0	1.0
Total Nitrogen (as N)	0.2	mg/L	1.3	1.2	2.6	2.3
Heavy Metals						
Aluminium	0.05	mg/L	22	28	4.3	7.5
Aluminium (filtered)	0.05	mg/L	1.3	0.43	0.67	0.35
Arsenic	0.001	mg/L	0.002	0.003	0.004	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.015	0.022	0.005	0.012
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.008	0.007	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.65	1.6	2.6	0.20
Iron (filtered)	0.05	mg/L	0.18	0.08	0.17	< 0.05
Lead	0.001	mg/L	0.017	0.034	0.006	0.007
Lead (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	0.0003	< 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.006	0.003	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.002	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.013	0.010	0.005
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.006	0.002
Alkali Metals						
Calcium	0.5	mg/L	1.1	2.9	6.2	8.0
Magnesium	0.5	mg/L	4.6	7.5	1.7	1.0
Potassium	0.5	mg/L	0.8	3.4	2.3	< 0.5
Sodium	0.5	mg/L	22	22	8.5	9.5

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 03, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 03, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 03, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 03, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 03, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 03, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 03, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	May 03, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 03, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 03, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 04, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 10, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 10, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 04, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 04, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 03, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 03, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 03, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	May 10, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	88			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	101			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	98			70-130	Pass	
m&p-Xylenes	%	90			70-130	Pass	
Xylenes - Total	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	96			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	88			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	
Chloride	%	100			70-130	Pass	
Nitrate & Nitrite (as N)	%	92			70-130	Pass	
Phosphate total (as P)	%	93			70-130	Pass	
Sulphate (as S)	%	109			70-130	Pass	
Total Dissolved Solids	%	99			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	125			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	94			70-130	Pass	
Nitrate (as N)	%	92			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrite (as N)	%	97			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	95			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	118			80-120	Pass		
Arsenic	%	101			80-120	Pass		
Arsenic (filtered)	%	101			80-120	Pass		
Cadmium (filtered)	%	102			70-130	Pass		
Chromium	%	102			80-120	Pass		
Chromium (filtered)	%	102			80-120	Pass		
Copper	%	100			80-120	Pass		
Copper (filtered)	%	100			80-120	Pass		
Iron	%	99			80-120	Pass		
Iron (filtered)	%	99			80-120	Pass		
Lead	%	103			80-120	Pass		
Lead (filtered)	%	103			80-120	Pass		
Manganese	%	100			80-120	Pass		
Manganese (filtered)	%	100			80-120	Pass		
Mercury	%	106			75-125	Pass		
Mercury (filtered)	%	106			70-130	Pass		
Nickel	%	100			80-120	Pass		
Nickel (filtered)	%	100			80-120	Pass		
Selenium	%	103			80-120	Pass		
Selenium (filtered)	%	103			80-120	Pass		
Zinc	%	103			80-120	Pass		
Zinc (filtered)	%	103			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	109			70-130	Pass		
Potassium	%	94			70-130	Pass		
Sodium	%	101			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	B16-My02106	NCP	%	82		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	B16-My02106	NCP	%	82		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Ap23825	NCP	%	86		70-130	Pass	
Nitrate & Nitrite (as N)	M16-My00630	NCP	%	93		70-130	Pass	
Phosphate total (as P)	M16-My03692	NCP	%	90		70-130	Pass	
Phosphorus reactive (as P)	M16-Ap25319	NCP	%	79		70-130	Pass	
Sulphate (as S)	M16-My01247	CP	%	90		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-My01438	NCP	%	101		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-My01438	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-My00630	NCP	%	93		70-130	Pass	
Nitrate (as N)	M16-My00630	NCP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nitrite (as N)	M16-My00630	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-My00417	NCP	%	97		75-125	Pass	
Arsenic (filtered)	M16-My01524	NCP	%	88		70-130	Pass	
Cadmium	S16-My03023	NCP	%	88		70-130	Pass	
Cadmium (filtered)	S16-My03262	NCP	%	102		70-130	Pass	
Chromium	M16-My00417	NCP	%	98		75-125	Pass	
Chromium (filtered)	M16-My01524	NCP	%	101		70-130	Pass	
Copper	M16-My00417	NCP	%	93		75-125	Pass	
Copper (filtered)	M16-My01524	NCP	%	97		70-130	Pass	
Iron	M16-My026776	NCP	%	94		75-125	Pass	
Iron (filtered)	M16-My03953	NCP	%	94		70-130	Pass	
Lead	M16-My00417	NCP	%	96		75-125	Pass	
Lead (filtered)	M16-My01524	NCP	%	99		70-130	Pass	
Manganese	M16-My00417	NCP	%	90		75-125	Pass	
Manganese (filtered)	M16-My01524	NCP	%	84		70-130	Pass	
Mercury	M16-My00417	NCP	%	106		70-130	Pass	
Mercury (filtered)	M16-My03685	NCP	%	77		70-130	Pass	
Nickel	M16-My00417	NCP	%	88		75-125	Pass	
Nickel (filtered)	M16-My01524	NCP	%	96		70-130	Pass	
Selenium	M16-My00417	NCP	%	97		75-125	Pass	
Selenium (filtered)	M16-My01524	NCP	%	86		70-130	Pass	
Zinc	M16-My00417	NCP	%	95		75-125	Pass	
Zinc (filtered)	M16-My01524	NCP	%	97		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My02726	NCP	%	100		70-130	Pass	
Magnesium	M16-My02726	NCP	%	103		70-130	Pass	
Potassium	M16-My02726	NCP	%	93		70-130	Pass	
Sodium	M16-My00244	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My01248	CP	%	77		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My01248	CP	%	109		70-130	Pass	
Toluene	M16-My01248	CP	%	101		70-130	Pass	
Ethylbenzene	M16-My01248	CP	%	105		70-130	Pass	
m&p-Xylenes	M16-My01248	CP	%	104		70-130	Pass	
o-Xylene	M16-My01248	CP	%	106		70-130	Pass	
Xylenes - Total	M16-My01248	CP	%	105		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My01248	CP	%	99		70-130	Pass	
TRH C6-C10	M16-My01248	CP	%	70		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-My01437	NCP	%	72		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-My00313	NCP	mg/L	0.04	0.05	11	30%	Pass	
TRH C10-C14	B16-My02105	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-My00313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-My00313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-My00313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-My00313	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-My00313	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-My00313	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-My00313	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M16-My00313	NCP	mg/L	0.04	0.05	10	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	B16-My02105	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Ap23825	NCP	mg/L	37	36	2.9	30%	Pass	
Conductivity (at 25°C)	M16-My01247	CP	uS/cm	180	180	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-My00630	NCP	mg/L	0.20	0.19	3.0	30%	Pass	
pH	M16-My01247	CP	pH Units	4.7	4.6	pass	30%	Pass	
Phosphate total (as P)	M16-My04715	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-My01524	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-My01247	CP	mg/L	< 5	< 5	<1	30%	Pass	
Total Dissolved Solids	M16-My03722	NCP	mg/L	740	750	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-My01247	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-My01247	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-My01247	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-My01247	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My00630	NCP	mg/L	0.45	0.43	4.0	30%	Pass	
Nitrate (as N)	M16-My00630	NCP	mg/L	0.20	0.19	3.0	30%	Pass	
Nitrite (as N)	M16-My00630	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-My04715	NCP	mg/L	0.7	0.7	4.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-My01499	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-My00417	NCP	mg/L	0.006	0.006	1.0	30%	Pass	
Arsenic (filtered)	M16-My01524	NCP	mg/L	0.11	0.11	3.0	30%	Pass	
Cadmium	S16-My02956	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass	
Cadmium (filtered)	S16-My03261	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Copper	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-My00417	NCP	mg/L	0.34	0.31	2.0	30%	Pass
Iron (filtered)	M16-My03953	NCP	mg/L	0.43	0.52	19	30%	Pass
Lead	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-My00417	NCP	mg/L	0.033	0.032	3.0	30%	Pass
Manganese (filtered)	M16-My01524	NCP	mg/L	0.10	0.097	3.0	30%	Pass
Mercury	M16-My00417	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-My01524	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-My00417	NCP	mg/L	0.040	0.040	1.0	30%	Pass
Nickel (filtered)	M16-My01524	NCP	mg/L	0.002	0.002	3.0	30%	Pass
Selenium	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-My00417	NCP	mg/L	0.005	0.005	4.0	30%	Pass
Zinc (filtered)	M16-My01524	NCP	mg/L	0.004	0.003	19	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My02726	NCP	mg/L	120	120	1.0	30%	Pass
Magnesium	M16-My02726	NCP	mg/L	89	87	2.0	30%	Pass
Potassium	M16-My02726	NCP	mg/L	54	53	3.0	30%	Pass
Sodium	M16-My00244	NCP	mg/L	160	150	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My01248	CP	mg/L	66	66	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 4, 2016 8:26 AM**
Eurofins | mgt reference: **499049**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **499049-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 04, 2016

Client Sample ID			MW29 Water	MW30 Water	MW31 Water	MW32 Water
Sample Matrix			M16-My02686	M16-My02687	M16-My02688	M16-My02689
Eurofins mgt Sample No.			May 03, 2016	May 03, 2016	May 03, 2016	May 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	74	84	94	113
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	55	26	47	38
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	0.25	< 0.01	0.18	0.29
Chloride						
Chloride	1	mg/L	46	29	67	130
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	280	140	240	420
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.8	< 0.05	< 0.05
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	0.03	2.8	< 0.02	< 0.02
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH						
pH	0.1	pH Units	4.7	3.8	5.2	5.6
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.72	0.31	0.53	0.69
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.32
Sulphate (as S)						
Sulphate (as S)	5	mg/L	18	< 5	< 5	< 5
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	^{Q19} 270	100	^{Q19} 200	^{Q19} 360

Client Sample ID			MW29 Water	MW30 Water	MW31 Water	MW32 Water
Sample Matrix			M16-My02686	M16-My02687	M16-My02688	M16-My02689
Eurofins mgt Sample No.			May 03, 2016	May 03, 2016	May 03, 2016	May 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	0.5	0.7	1.4
Total Nitrogen (as N)	0.2	mg/L	1.5	3.3	0.7	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	3.0	0.96	14	1.8
Aluminium (filtered)	0.05	mg/L	1.2	0.56	0.53	0.51
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.003	0.009	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.63	0.09	0.48	0.52
Iron (filtered)	0.05	mg/L	0.34	< 0.05	0.22	0.21
Lead	0.001	mg/L	0.003	0.001	0.003	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.016	0.006	0.011	0.010
Zinc (filtered)	0.001	mg/L	0.008	0.005	0.006	0.002
Alkali Metals						
Calcium	0.5	mg/L	7.0	3.6	2.1	7.3
Magnesium	0.5	mg/L	11	2.1	4.5	7.6
Potassium	0.5	mg/L	2.2	0.8	2.2	5.5
Sodium	0.5	mg/L	33	20	40	68

Client Sample ID			MW33 Water	MW34 Water	SWL15-1 Water	SWL15-2 Water
Sample Matrix			M16-My02690	M16-My02691	M16-My02692	M16-My02693
Eurofins mgt Sample No.			May 03, 2016	May 03, 2016	May 03, 2016	May 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	101	107	105	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity and Inorganic Compounds						
Acidity (as CaCO ₃)	10	mg/L	32	35	28	30
Ammonia (as N)	0.01	mg/L	0.44	0.09	0.06	0.05
Chloride	1	mg/L	68	74	86	87
Conductivity (at 25°C)	1	uS/cm	340	350	310	310
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.31	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.02	0.26	0.03	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.05	< 0.02	< 0.02
pH	0.1	pH Units	6.7	4.9	4.7	4.8
Phosphate total (as P)	0.05	mg/L	0.30	1.00	0.09	1.3
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.32	0.22	0.22
Sulphate (as S)	5	mg/L	< 5	9.5	< 5	< 5
Total Dissolved Solids	10	mg/L	230	^{Q19} 310	^{Q19} 310	^{Q19} 300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.4	0.3	1.3
Total Nitrogen (as N)	0.2	mg/L	0.5	1.7	0.3	1.3
Turbidity	1	NTU	-	-	7.5	3.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	90	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	90	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	2.5	2.8	0.91	0.91
Aluminium (filtered)	0.05	mg/L	0.23	0.68	0.77	0.81
Arsenic	0.001	mg/L	0.002	0.004	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW33 Water	MW34 Water	SWL15-1 Water	SWL15-2 Water
Sample Matrix			M16-My02690	M16-My02691	M16-My02692	M16-My02693
Eurofins mgt Sample No.			May 03, 2016	May 03, 2016	May 03, 2016	May 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.004	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.8	3.7	0.28	0.28
Iron (filtered)	0.05	mg/L	0.11	2.1	0.23	0.22
Lead	0.001	mg/L	0.005	0.003	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.009	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.009	0.009	0.008	0.005
Zinc (filtered)	0.001	mg/L	0.001	0.001	0.004	0.003
Alkali Metals						
Calcium	0.5	mg/L	26	9.3	4.5	4.6
Magnesium	0.5	mg/L	5.2	5.2	6.9	6.6
Potassium	0.5	mg/L	2.9	9.9	2.0	2.0
Sodium	0.5	mg/L	40	46	49	47
Pathogens						
E.coli	1	MPN/100mL	-	-	2900	2500
Thermotolerant Coliforms	1	MPN/100mL	-	-	2900	2900

Client Sample ID			QC99 Water	QC100 Water
Sample Matrix			M16-My02694	M16-My02695
Eurofins mgt Sample No.			May 03, 2016	May 03, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 04, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 04, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 04, 2016	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 04, 2016	28 Day
Chloride - Method: MGT 1100A	Melbourne	May 04, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 04, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 04, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 04, 2016	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 04, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 04, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	May 04, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 04, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 04, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	May 04, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 04, 2016	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 05, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 05, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 04, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 04, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	May 04, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	May 04, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 04, 2016	28 Day

Description

Total Kjeldahl Nitrogen (as N)

- Method: APHA 4500 TKN

Testing Site

Melbourne

Extracted

May 05, 2016

Holding Time

7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	105			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	107			70-130	Pass	
Toluene	%	107			70-130	Pass	
Ethylbenzene	%	107			70-130	Pass	
m&p-Xylenes	%	109			70-130	Pass	
Xylenes - Total	%	108			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	109			70-130	Pass	
TRH C6-C10	%	91			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	105			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	
Ammonia (as N)	%	97			70-130	Pass	
Chloride	%	115			70-130	Pass	
Nitrate & Nitrite (as N)	%	94			70-130	Pass	
Nitrate (as N)	%	94			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Phosphate total (as P)	%	85			70-130	Pass	
Sulphate (as S)	%	109			70-130	Pass	
Total Dissolved Solids	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	100			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	124			70-130	Pass	
LCS - % Recovery							

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals								
Arsenic		%	101			80-120	Pass	
Arsenic (filtered)		%	101			80-120	Pass	
Cadmium (filtered)		%	102			70-130	Pass	
Chromium		%	102			80-120	Pass	
Chromium (filtered)		%	102			80-120	Pass	
Copper		%	100			80-120	Pass	
Copper (filtered)		%	100			80-120	Pass	
Iron		%	99			80-120	Pass	
Iron (filtered)		%	99			80-120	Pass	
Lead		%	103			80-120	Pass	
Lead (filtered)		%	103			80-120	Pass	
Manganese		%	100			80-120	Pass	
Manganese (filtered)		%	100			80-120	Pass	
Mercury		%	106			75-125	Pass	
Mercury (filtered)		%	106			70-130	Pass	
Nickel		%	100			80-120	Pass	
Nickel (filtered)		%	100			80-120	Pass	
Selenium		%	103			80-120	Pass	
Selenium (filtered)		%	103			80-120	Pass	
Zinc		%	103			80-120	Pass	
Zinc (filtered)		%	103			80-120	Pass	
LCS - % Recovery								
Alkali Metals								
Calcium		%	101			70-130	Pass	
Magnesium		%	107			70-130	Pass	
Potassium		%	92			70-130	Pass	
Sodium		%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	B16-My01838	NCP	%	103		70-130	Pass	
TRH C10-C14	B16-My02106	NCP	%	82		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	B16-My01838	NCP	%	86		70-130	Pass	
Toluene	B16-My01838	NCP	%	86		70-130	Pass	
Ethylbenzene	B16-My01838	NCP	%	86		70-130	Pass	
m&p-Xylenes	B16-My01838	NCP	%	89		70-130	Pass	
o-Xylene	B16-My01838	NCP	%	85		70-130	Pass	
Xylenes - Total	B16-My01838	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	B16-My01838	NCP	%	87		70-130	Pass	
TRH C6-C10	B16-My01838	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	B16-My02106	NCP	%	82		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M16-My01528	NCP	%	97		70-130	Pass	
Nitrate & Nitrite (as N)	M16-My01528	NCP	%	72		70-130	Pass	
Nitrate (as N)	M16-My01528	NCP	%	72		70-130	Pass	
Nitrite (as N)	M16-My01528	NCP	%	99		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphate total (as P)	M16-My03692	NCP	%	90			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-My01437	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	M16-My03060	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-My00417	NCP	%	97			75-125	Pass	
Arsenic (filtered)	M16-My01524	NCP	%	88			70-130	Pass	
Cadmium	S16-My02495	NCP	%	94			70-130	Pass	
Cadmium (filtered)	S16-My03262	NCP	%	102			70-130	Pass	
Chromium	M16-My00417	NCP	%	98			75-125	Pass	
Chromium (filtered)	M16-My01524	NCP	%	101			70-130	Pass	
Copper	M16-My00417	NCP	%	93			75-125	Pass	
Copper (filtered)	M16-My01524	NCP	%	97			70-130	Pass	
Iron	M16-My026776	NCP	%	94			75-125	Pass	
Iron (filtered)	M16-My03953	NCP	%	94			70-130	Pass	
Lead	M16-My00417	NCP	%	96			75-125	Pass	
Lead (filtered)	M16-My01524	NCP	%	99			70-130	Pass	
Manganese	M16-My00417	NCP	%	90			75-125	Pass	
Manganese (filtered)	M16-My01524	NCP	%	84			70-130	Pass	
Mercury	M16-My00417	NCP	%	106			70-130	Pass	
Mercury (filtered)	M16-My03685	NCP	%	77			70-130	Pass	
Nickel	M16-My00417	NCP	%	88			75-125	Pass	
Nickel (filtered)	M16-My01524	NCP	%	96			70-130	Pass	
Selenium	M16-My00417	NCP	%	97			75-125	Pass	
Selenium (filtered)	M16-My01524	NCP	%	86			70-130	Pass	
Zinc	M16-My00417	NCP	%	95			75-125	Pass	
Zinc (filtered)	M16-My01524	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-My02493	NCP	%	95			70-130	Pass	
Magnesium	M16-My02493	NCP	%	101			70-130	Pass	
Potassium	M16-My02726	NCP	%	93			70-130	Pass	
Sodium	M16-My02493	NCP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-My02687	CP	%	107			70-130	Pass	
Sulphate (as S)	M16-My02687	CP	%	90			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-My02691	CP	%	121			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	B16-My01838	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	B16-My02105	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	B16-My01838	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	B16-My01838	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	B16-My01838	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	B16-My01838	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	B16-My01838	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	B16-My01838	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	B16-My01838	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	B16-My01838	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	B16-My02105	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	B16-My02105	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My01524	NCP	mg/L	37	49	27	30%	Pass
Ammonia (as N)	M16-My01528	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Conductivity (at 25°C)	M16-My02719	NCP	uS/cm	850	850	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-My01528	NCP	mg/L	4.8	4.8	<1	30%	Pass
Nitrate (as N)	M16-My01528	NCP	mg/L	4.8	4.8	<1	30%	Pass
Nitrite (as N)	M16-My01528	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
pH	M16-My02719	NCP	pH Units	7.0	7.0	pass	30%	Pass
Phosphate total (as P)	M16-My04715	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M16-My03722	NCP	mg/L	740	750	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-My01472	NCP	mg/L	0.3	0.3	2.8	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My02719	NCP	mg/L	160	160	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My02719	NCP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My02719	NCP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My02719	NCP	mg/L	160	160	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M16-My00417	NCP	mg/L	0.006	0.006	1.0	30%	Pass
Arsenic (filtered)	M16-My01524	NCP	mg/L	0.11	0.11	3.0	30%	Pass
Cadmium	S16-My02494	NCP	mg/L	< 0.0005	< 0.0005	<1	30%	Pass
Cadmium (filtered)	S16-My06640	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-My00417	NCP	mg/L	0.34	0.31	2.0	30%	Pass
Iron (filtered)	M16-My03953	NCP	mg/L	0.43	0.52	19	30%	Pass
Lead	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-My00417	NCP	mg/L	0.033	0.032	3.0	30%	Pass
Manganese (filtered)	M16-My01524	NCP	mg/L	0.10	0.097	3.0	30%	Pass
Mercury	M16-My00417	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-My01524	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-My00417	NCP	mg/L	0.040	0.040	1.0	30%	Pass
Nickel (filtered)	M16-My01524	NCP	mg/L	0.002	0.002	3.0	30%	Pass
Selenium	M16-My00417	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Selenium (filtered)	M16-My01524	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-My00417	NCP	mg/L	0.005	0.005	4.0	30%	Pass
Zinc (filtered)	M16-My01524	NCP	mg/L	0.004	0.003	19	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My02493	NCP	mg/L	6.4	6.5	2.0	30%	Pass
Magnesium	M16-My02493	NCP	mg/L	< 5	< 5	<1	30%	Pass
Potassium	M16-My02726	NCP	mg/L	54	53	3.0	30%	Pass
Sodium	M16-My02493	NCP	mg/L	76	77	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My02691	CP	mg/L	0.32	0.28	11	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-My03035	NCP	NTU	1.5	1.3	13	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 5, 2016 7:59 AM**
Eurofins | mgt reference: **499243**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

MW51 WRITTEN TWICE ON COC

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
89-91 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **499243-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 05, 2016

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-My04044	M16-My04045	M16-My04046	M16-My04047
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	81	81	80	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	13	51	19	26
Chloride						
Chloride	1	mg/L	340	2900	12000	820
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	1200	8500	36000	2900
pH						
pH	0.1	pH Units	7.0	4.6	7.2	7.6
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.51	0.17	0.28	0.10
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.21	< 0.05
Sulphate (as S)						
Sulphate (as S)	5	mg/L	10	88	420	37
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	^{Q19} 860	5200	22000	1600
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	110	< 20	130	71
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	110	< 20	130	71

Client Sample ID			MW54	MW53	MW52	MW51
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04044	M16-My04045	M16-My04046	M16-My04047
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.29	0.07	0.13
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.45	35	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.44	35	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.08	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.3	1.6	10	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.4	1.9	10	0.4
Total Nitrogen (as N)	0.2	mg/L	2.4	2.4	45	0.4
Heavy Metals						
Aluminium	0.05	mg/L	2.6	4.4	4.6	2.1
Aluminium (filtered)	0.05	mg/L	< 0.05	0.43	0.11	< 0.05
Arsenic	0.001	mg/L	0.010	0.017	0.008	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00059	0.00073	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00055	0.00065	< 0.00005
Chromium	0.001	mg/L	0.007	0.003	0.008	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.007	0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.007	< 0.001
Iron	0.05	mg/L	47	16	2.8	10
Iron (filtered)	0.05	mg/L	< 0.05	0.59	0.12	2.6
Lead	0.001	mg/L	0.014	0.028	0.010	0.005
Lead (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Manganese	0.005	mg/L	0.059	0.059	0.068	0.010
Manganese (filtered)	0.005	mg/L	0.045	0.049	0.068	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.031	0.013	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.028	0.012	0.001
Selenium	0.001	mg/L	0.001	0.001	0.020	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.011	< 0.001
Zinc	0.001	mg/L	0.011	0.23	0.074	0.005
Zinc (filtered)	0.001	mg/L	0.001	0.18	0.074	0.004
Alkali Metals						
Calcium	0.5	mg/L	59	62	190	13
Magnesium	0.5	mg/L	23	250	920	62
Potassium	0.5	mg/L	9.2	24	130	11
Sodium	0.5	mg/L	140	1500	6400	450

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW44 Water
Sample Matrix			M16-My04048	M16-My04049	M16-My04050	M16-My04051
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	86	78	78	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	26	39	48	< 10
Chloride	1	mg/L	2700	1500	870	450
Conductivity (at 25°C)	1	uS/cm	7300	4200	2700	2300
pH	0.1	pH Units	6.1	4.7	4.6	8.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.12	0.68
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.60
Sulphate (as S)	5	mg/L	54	63	45	28
Total Dissolved Solids	10	mg/L	4700	2800	1700	1500
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	27	< 20	< 20	420
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	27	< 20	< 20	420
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.25	0.02	0.03	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.11	< 0.05	2.8
Nitrate (as N)	0.02	mg/L	0.02	0.10	< 0.02	2.8
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.06
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.8	56
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.8	56
Total Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.8	59
Heavy Metals						
Aluminium	0.05	mg/L	3.3	4.2	27	6.9
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.14	< 0.05
Arsenic	0.001	mg/L	0.003	0.002	0.015	0.029
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.022

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW44 Water
Sample Matrix			M16-My04048	M16-My04049	M16-My04050	M16-My04051
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	0.00005	0.00009	0.0028	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00006	0.0014	< 0.00005
Chromium	0.001	mg/L	0.011	0.015	0.029	0.018
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Copper	0.001	mg/L	0.004	0.017	0.013	0.011
Copper (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	0.007
Iron	0.05	mg/L	6.5	7.0	29	8.4
Iron (filtered)	0.05	mg/L	< 0.05	0.08	0.14	0.30
Lead	0.001	mg/L	0.024	0.041	0.21	0.016
Lead (filtered)	0.001	mg/L	< 0.001	0.017	0.011	0.001
Manganese	0.005	mg/L	0.018	0.019	0.027	0.006
Manganese (filtered)	0.005	mg/L	0.017	0.018	0.023	< 0.005
Mercury	0.0001	mg/L	0.0002	0.0005	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.007	0.081	0.010
Nickel (filtered)	0.001	mg/L	0.002	0.006	0.017	0.007
Selenium	0.001	mg/L	< 0.001	0.001	0.004	0.041
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.035
Zinc	0.001	mg/L	0.005	0.038	0.019	0.017
Zinc (filtered)	0.001	mg/L	0.004	0.034	0.009	0.008
Alkali Metals						
Calcium	0.5	mg/L	29	22	13	18
Magnesium	0.5	mg/L	180	120	70	34
Potassium	0.5	mg/L	38	14	13	5.6
Sodium	0.5	mg/L	1400	680	470	370

Client Sample ID			MW43 Water	SWL21-1 Water	SWL21-2 Water	SWL21-3 Water
Sample Matrix			M16-My04052	M16-My04053	M16-My04054	M16-My04055
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	89	97	88	86

Client Sample ID			MW43	SWL21-1	SWL21-2	SWL21-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04052	M16-My04053	M16-My04054	M16-My04055
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	28	< 10	< 10	< 10
Chloride	1	mg/L	1200	440	440	450
Conductivity (at 25°C)	1	uS/cm	3900	1500	1600	1600
pH	0.1	pH Units	6.4	7.1	7.0	7.0
Phosphate total (as P)	0.05	mg/L	0.56	0.30	0.31	0.34
Phosphorus reactive (as P)	0.05	mg/L	0.06	0.14	0.11	0.13
Sulphate (as S)	5	mg/L	17	11	12	16
Total Dissolved Solids	10	mg/L	^{Q19} 3500	^{Q19} 1100	^{Q19} 1100	^{Q19} 1100
Turbidity	1	NTU	-	11	12	14
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	180	57	56	56
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	180	57	56	56
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.2	0.07	0.07	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	25	1.8	2.1	2.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	26	1.9	2.2	2.1
Total Nitrogen (as N)	0.2	mg/L	26	1.9	2.2	2.1
Heavy Metals						
Aluminium	0.05	mg/L	18	0.06	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	1.3	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.016	0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00013	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.034	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	6.0	1.9	1.8	1.8
Iron (filtered)	0.05	mg/L	0.11	1.1	0.97	1.0
Lead	0.001	mg/L	0.034	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.030	0.031	0.030
Manganese (filtered)	0.005	mg/L	0.008	0.030	0.027	0.029
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			MW43 Water	SWL21-1 Water	SWL21-2 Water	SWL21-3 Water
Sample Matrix			M16-My04052	M16-My04053	M16-My04054	M16-My04055
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.003	0.002	0.002	0.002
Selenium	0.001	mg/L	0.019	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.007	0.004	0.009	0.004
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.003	0.004
Alkali Metals						
Calcium	0.5	mg/L	64	21	21	22
Magnesium	0.5	mg/L	120	38	38	40
Potassium	0.5	mg/L	8.5	11	12	11
Sodium	0.5	mg/L	580	220	230	230
Pathogens						
E.coli	1	MPN/100mL	-	210	520	380
Thermotolerant Coliforms	1	MPN/100mL	-	640	1100	630

Client Sample ID			SWL20-1 Water	SWL20-2 Water	SWL20-3 Water	SWL19-1 Water
Sample Matrix			M16-My04056	M16-My04057	M16-My04058	M16-My04059
Eurofins mgt Sample No.			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	78	74	87	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL19-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04056	M16-My04057	M16-My04058	M16-My04059
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	13	10	< 10	< 10
Chloride	1	mg/L	1400	1400	1400	1100
Conductivity (at 25°C)	1	uS/cm	3900	3800	3900	3500
pH	0.1	pH Units	6.1	6.4	6.3	5.9
Phosphate total (as P)	0.05	mg/L	0.08	0.08	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	44	45	41	43
Total Dissolved Solids	10	mg/L	2700	2700	2700	2300
Turbidity	1	NTU	15	15	15	1.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.03	0.04	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.4	1.4	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	1.4	1.4	0.3
Total Nitrogen (as N)	0.2	mg/L	1.4	1.4	1.4	0.3
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	1.4	1.5	0.06
Iron (filtered)	0.05	mg/L	0.42	0.41	0.38	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.029	0.029	0.030	0.051
Manganese (filtered)	0.005	mg/L	0.028	0.028	0.029	0.051
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.003	0.003	0.002
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.003	0.002

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL19-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04056	M16-My04057	M16-My04058	M16-My04059
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	13	14	13	13
Magnesium	0.5	mg/L	80	84	80	83
Potassium	0.5	mg/L	15	16	15	14
Sodium	0.5	mg/L	690	710	690	610
Pathogens						
E.coli	1	MPN/100mL	98	85	110	1300
Thermotolerant Coliforms	1	MPN/100mL	290	130	120	1300

Client Sample ID			SWL19-2	SWL19-3	SWL18-1	SWL18-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04060	M16-My04061	M16-My04062	M16-My04063
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	84	81	77	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Other Parameters						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	1200	1100	600	610
Conductivity (at 25°C)	1	uS/cm	3400	3400	2000	2100
pH	0.1	pH Units	5.7	5.7	6.9	7.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.25	0.24
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	0.10
Sulphate (as S)	5	mg/L	48	48	16	16
Total Dissolved Solids	10	mg/L	2300	2300	^{Q19} 1500	^{Q19} 1600
Turbidity	1	NTU	1.7	1.7	16	16

Client Sample ID			SWL19-2	SWL19-3	SWL18-1	SWL18-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04060	M16-My04061	M16-My04062	M16-My04063
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	55	62
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	55	62
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	0.12	0.12
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.4	2.1	2.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.4	2.2	2.3
Total Nitrogen (as N)	0.2	mg/L	0.2	0.4	2.2	2.3
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	0.11	0.14
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.08	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.12	0.17	2.5	2.4
Iron (filtered)	0.05	mg/L	< 0.05	0.05	1.3	1.3
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.055	0.056	0.043	0.042
Manganese (filtered)	0.005	mg/L	0.054	0.056	0.039	0.040
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.003	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.003	0.002	0.006	0.006
Zinc (filtered)	0.001	mg/L	0.003	0.002	0.005	0.005
Alkali Metals						
Calcium	0.5	mg/L	12	12	24	24
Magnesium	0.5	mg/L	81	83	53	53
Potassium	0.5	mg/L	13	12	13	14
Sodium	0.5	mg/L	590	600	320	320
Pathogens						
E.coli	1	MPN/100mL	<1	1	97	170
Thermotolerant Coliforms	1	MPN/100mL	47	22	470	740

Client Sample ID			SWL18-3	QC101	QC102	QC103
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04064	M16-My04065	M16-My04066	M16-My04067
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	-	-	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	-	-	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	-	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	< 0.001
Toluene	0.001	mg/L	< 0.001	-	-	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	< 0.002
o-Xylene	0.001	mg/L	< 0.001	-	-	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	-	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	81	-	-	78
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	-	-	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	-	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	-	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	-	-	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	-	-	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	-	-	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	-	-	33
Chloride	1	mg/L	670	-	-	2900
Conductivity (at 25°C)	1	uS/cm	2100	-	-	7600
pH	0.1	pH Units	6.9	-	-	5.9
Phosphate total (as P)	0.05	mg/L	0.23	-	-	0.08
Phosphorus reactive (as P)	0.05	mg/L	0.11	-	-	< 0.05
Sulphate (as S)	5	mg/L	16	-	-	56
Total Dissolved Solids	10	mg/L	^{Q19} 1500	-	-	5100
Turbidity	1	NTU	15	-	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	55	-	-	30
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO3)	20	mg/L	55	-	-	30
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.15	-	-	0.20
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-	0.06
Nitrate (as N)	0.02	mg/L	< 0.02	-	-	0.06
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.6	-	-	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.8	-	-	0.7
Total Nitrogen (as N)	0.2	mg/L	2.8	-	-	0.8

Client Sample ID			SWL18-3	QC101	QC102	QC103
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My04064	M16-My04065	M16-My04066	M16-My04067
Date Sampled			May 04, 2016	May 04, 2016	May 04, 2016	May 04, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.19	-	-	55
Aluminium (filtered)	0.05	mg/L	0.10	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	-	-	0.016
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-	0.00039
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00027
Chromium	0.001	mg/L	< 0.001	-	-	0.15
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-	0.043
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	-	-	14
Iron (filtered)	0.05	mg/L	1.3	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-	0.34
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.041	-	-	0.018
Manganese (filtered)	0.005	mg/L	0.038	< 0.005	< 0.005	0.017
Mercury	0.0001	mg/L	< 0.0001	-	-	0.0021
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	-	-	0.008
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	-	-	0.010
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.001	mg/L	0.005	-	-	0.020
Zinc (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	0.004
Alkali Metals						
Calcium	0.5	mg/L	23	-	-	30
Magnesium	0.5	mg/L	52	-	-	180
Potassium	0.5	mg/L	13	-	-	38
Sodium	0.5	mg/L	310	-	-	1400
Pathogens						
E.coli	1	MPN/100mL	180	-	-	-
Thermotolerant Coliforms	1	MPN/100mL	880	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 05, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 05, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 06, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 05, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 05, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 05, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 05, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 06, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	May 05, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 05, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 05, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	May 06, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 05, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 12, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 12, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 12, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 12, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 05, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 05, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	May 05, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	May 05, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	May 12, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 12, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	97			70-130	Pass	
TRH C10-C14	%	86			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	122			70-130	Pass	
Toluene	%	126			70-130	Pass	
Ethylbenzene	%	129			70-130	Pass	
m&p-Xylenes	%	130			70-130	Pass	
Xylenes - Total	%	128			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	75			70-130	Pass	
TRH C6-C10	%	91			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	89			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	102			70-130	Pass	
Chloride	%	97			70-130	Pass	
Phosphate total (as P)	%	109			70-130	Pass	
Sulphate (as S)	%	109			70-130	Pass	
Total Dissolved Solids	%	92			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	122			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	94			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrate & Nitrite (as N)	%	90			70-130	Pass		
Nitrate (as N)	%	90			70-130	Pass		
Nitrite (as N)	%	96			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	117			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	118			80-120	Pass		
Aluminium (filtered)	%	118			80-120	Pass		
Arsenic	%	92			80-120	Pass		
Arsenic (filtered)	%	92			80-120	Pass		
Cadmium	%	111			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	95			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	92			80-120	Pass		
Copper (filtered)	%	92			80-120	Pass		
Iron	%	117			80-120	Pass		
Iron (filtered)	%	95			80-120	Pass		
Lead	%	97			80-120	Pass		
Lead (filtered)	%	97			80-120	Pass		
Manganese	%	91			80-120	Pass		
Manganese (filtered)	%	91			80-120	Pass		
Mercury	%	89			75-125	Pass		
Mercury (filtered)	%	89			70-130	Pass		
Nickel	%	92			80-120	Pass		
Nickel (filtered)	%	92			80-120	Pass		
Selenium	%	93			80-120	Pass		
Selenium (filtered)	%	93			80-120	Pass		
Zinc	%	93			80-120	Pass		
Zinc (filtered)	%	93			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	98			70-130	Pass		
Magnesium	%	104			70-130	Pass		
Potassium	%	90			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-My05884	NCP	%	104		70-130	Pass	
Phosphorus reactive (as P)	M16-My04124	NCP	%	82		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-My03692	NCP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M16-My03692	NCP	%	91		70-130	Pass	
Nitrate (as N)	M16-My03692	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-My03692	NCP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-My05952	NCP	%	98		75-125	Pass	
Arsenic (filtered)	M16-My03972	NCP	%	94		70-130	Pass	
Cadmium (filtered)	S16-My10273	NCP	%	95		70-130	Pass	
Chromium	M16-My05952	NCP	%	99		75-125	Pass	
Chromium (filtered)	M16-My03972	NCP	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Copper	M16-My05952	NCP	%	100		75-125	Pass	
Copper (filtered)	M16-My03972	NCP	%	92		70-130	Pass	
Iron (filtered)	M16-My06175	NCP	%	84		70-130	Pass	
Lead	M16-My05952	NCP	%	102		75-125	Pass	
Lead (filtered)	M16-My03972	NCP	%	96		70-130	Pass	
Manganese	M16-My05952	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-My03972	NCP	%	92		70-130	Pass	
Mercury	M16-My05952	NCP	%	98		70-130	Pass	
Mercury (filtered)	M16-My06175	NCP	%	80		70-130	Pass	
Nickel	M16-My05952	NCP	%	99		75-125	Pass	
Nickel (filtered)	M16-My03972	NCP	%	90		70-130	Pass	
Selenium	M16-My05952	NCP	%	99		75-125	Pass	
Selenium (filtered)	M16-My03972	NCP	%	96		70-130	Pass	
Zinc	M16-My05952	NCP	%	100		75-125	Pass	
Zinc (filtered)	M16-My03972	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My04044	CP	%	100		70-130	Pass	
Magnesium	M16-My04044	CP	%	97		70-130	Pass	
Potassium	M16-My04044	CP	%	88		70-130	Pass	
Sodium	M16-My04044	CP	%	100		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	M16-My04045	CP	%	97		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-My04045	CP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron	M16-My05952	NCP	%	97		75-125	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-My04047	CP	%	80		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-My04047	CP	%	118		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-My04049	CP	%	94		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My04050	CP	%	114		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My04050	CP	%	105		70-130	Pass	
Toluene	M16-My04050	CP	%	110		70-130	Pass	
Ethylbenzene	M16-My04050	CP	%	112		70-130	Pass	
m&p-Xylenes	M16-My04050	CP	%	111		70-130	Pass	
o-Xylene	M16-My04050	CP	%	110		70-130	Pass	
Xylenes - Total	M16-My04050	CP	%	111		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My04050	CP	%	78		70-130	Pass	
TRH C6-C10	M16-My04050	CP	%	104		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Calcium	M16-My04056	CP	%	100			70-130	Pass	
Magnesium	M16-My04056	CP	%	102			70-130	Pass	
Potassium	M16-My04056	CP	%	91			70-130	Pass	
Sodium	M16-My04056	CP	%	110			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-My04058	CP	%	93			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-My04060	CP	%	87			70-130	Pass	
Sulphate (as S)	M16-My04060	CP	%	84			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-My04061	CP	%	80			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-My04044	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My04044	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My04044	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My04044	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My04044	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My04044	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My03692	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-My03692	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-My03692	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-My03692	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-My04124	NCP	mg/L	22	22	3.0	30%	Pass	
Arsenic	M16-My05952	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-My03972	NCP	mg/L	0.002	0.001	22	30%	Pass	
Cadmium (filtered)	S16-My10272	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-My05952	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-My03972	NCP	mg/L	0.005	0.005	<1	30%	Pass	
Copper	M16-My05952	NCP	mg/L	0.002	0.002	15	30%	Pass	
Copper (filtered)	M16-My03972	NCP	mg/L	0.004	0.004	2.0	30%	Pass	
Iron (filtered)	M16-My03972	NCP	mg/L	0.58	0.59	2.0	30%	Pass	
Lead	M16-My05952	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-My03972	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-My05952	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-My03972	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-My05952	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-My03972	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-My05952	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-My03972	NCP	mg/L	0.007	0.007	1.0	30%	Pass	
Selenium	M16-My05952	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-My03972	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-My05952	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Zinc (filtered)	M16-My03972	NCP	mg/L	0.006	0.005	14	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My04044	CP	mg/L	59	65	10	30%	Pass
Magnesium	M16-My04044	CP	mg/L	23	25	9.0	30%	Pass
Potassium	M16-My04044	CP	mg/L	9.2	10	12	30%	Pass
Sodium	M16-My04044	CP	mg/L	140	160	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron	M16-My05952	NCP	mg/L	0.05	0.06	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My04047	CP	mg/L	1600	1700	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My04048	CP	mg/L	26	24	11	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-My04048	CP	mg/L	0.00005	0.00005	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M16-My04049	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M16-My04049	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M16-My04049	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M16-My04049	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M16-My04049	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M16-My04049	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M16-My04049	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-My04049	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-My04049	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My04049	CP	uS/cm	4200	4100	1.0	30%	Pass
pH	M16-My04049	CP	pH Units	4.7	4.8	pass	30%	Pass
Total Dissolved Solids	M16-My04049	CP	mg/L	2800	2800	1.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My04049	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My04049	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My04049	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My04049	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My04053	CP	mg/L	1100	1100	7.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-My06068	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My04056	CP	mg/L	2700	2600	3.0	30%	Pass

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My04056	CP	mg/L	13	13	2.0	30%	Pass
Magnesium	M16-My04056	CP	mg/L	80	81	1.0	30%	Pass
Potassium	M16-My04056	CP	mg/L	15	15	1.0	30%	Pass
Sodium	M16-My04056	CP	mg/L	690	710	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My04057	CP	uS/cm	3800	3900	4.0	30%	Pass
pH	M16-My04057	CP	pH Units	6.4	6.5	pass	30%	Pass
Total Dissolved Solids	M16-My04057	CP	mg/L	2700	2700	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My04057	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My04057	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My04057	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My04057	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-My04057	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My04058	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-My04060	CP	mg/L	1200	1200	4.4	30%	Pass
Sulphate (as S)	M16-My04060	CP	mg/L	48	49	1.2	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-My04061	CP	mg/L	1100	1100	2.0	30%	Pass
Phosphate total (as P)	M16-My04061	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-My04061	CP	mg/L	48	48	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-My04061	CP	mg/L	0.4	0.4	8.9	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-My04063	CP	NTU	16	15	7.9	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My04064	CP	mg/L	0.11	0.11	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 6, 2016 8:11 AM**
Eurofins | mgt reference: **499491**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

PLEASE SEND FILTERED METALS SAMPLES AS WELL AS UNFILTERED METALS BOTTLES. CONTAINERS FOR SAMPLES SWL17-1, SWL17-2, MW40 AND MW41 ARRIVED MONDAY. MICROBIOLOGICAL TESTING FOR SWL17-1 AND 2 ARE OUT OF HOLDING TIME. ADDITIONAL SAMPLES QC106 AND QC111

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Richelle Bunbury

Report 499491-W
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 06, 2016

Client Sample ID			MW46 Water	MW47 Water	MW45 Water	MW42 Water
Sample Matrix			M16-My06370	M16-My06371	M16-My06372	M16-My06373
Eurofins mgt Sample No.			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Date Sampled	LOR	Unit				
Test/Reference						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	95	95	96	98
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity & Chloride						
Acidity (as CaCO3)	10	mg/L	11	< 10	< 10	34
Chloride	1	mg/L	510	540	350	54
Conductivity & Nitrate & Nitrite						
Conductivity (at 25°C)	1	uS/cm	2000	2100	1400	220
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
pH & Phosphorus						
pH	0.1	pH Units	7.8	8.1	7.8	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.22	0.20	0.13
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.11	< 0.05	0.05
Sulphate & Solids						
Sulphate (as S)	5	mg/L	5.8	15	11	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 1800	1500	950	^{Q19} 230

Client Sample ID			MW46	MW47	MW45	MW42
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06370	M16-My06371	M16-My06372	M16-My06373
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	270	250	240	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	270	250	240	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.38	0.06	0.17	0.72
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.6	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.4	0.8	1.8
Total Nitrogen (as N)	0.2	mg/L	0.6	0.4	0.8	1.8
Heavy Metals						
Aluminium	0.05	mg/L	4.0	4.3	4.0	1.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.52
Arsenic	0.001	mg/L	0.003	0.006	0.010	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00010	0.00005	0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.009	0.011	0.009	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.007	0.002	0.003	0.002
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	7.7	5.3	17	0.25
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.06	0.14
Lead	0.001	mg/L	0.007	0.009	0.008	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.087	0.008	< 0.005
Manganese (filtered)	0.005	mg/L	0.007	0.070	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	0.010	0.011	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.003	0.001	< 0.001
Selenium	0.001	mg/L	0.003	0.003	0.004	0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	0.016	0.015	0.007	< 0.005
Zinc (filtered)	0.001	mg/L	0.003	0.001	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	73	53	47	1.6
Magnesium	0.5	mg/L	43	36	28	4.3
Potassium	0.5	mg/L	6.1	4.4	4.3	1.4
Sodium	0.5	mg/L	250	310	180	23

Client Sample ID			MW39	MW38	MW37	MW36
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06374	M16-My06375	M16-My06376	M16-My06377
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	100	96	91	103
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	11	31	< 10	< 10
Chloride	1	mg/L	84	1300	19	16
Conductivity (at 25°C)	1	uS/cm	390	4300	100	120
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.06	1.4	3.9
pH	0.1	pH Units	6.7	6.5	5.4	6.5
Phosphate total (as P)	0.05	mg/L	0.82	0.34	0.29	0.15
Phosphorus reactive (as P)	0.05	mg/L	0.53	0.05	0.20	0.09
Sulphate (as S)	5	mg/L	16	150	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 340	^{Q19} 3800	^{Q19} 110	^{Q19} 140
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	36	46	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	36	46	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.40	0.51	0.16	0.02
Nitrate (as N)	0.02	mg/L	< 0.02	0.06	1.4	3.9
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	4.2	0.84	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	4.7	1.0	< 0.2
Total Nitrogen (as N)	0.2	mg/L	1.8	4.8	2.4	3.9
Heavy Metals						
Aluminium	0.05	mg/L	0.14	9.8	0.23	0.10
Aluminium (filtered)	0.05	mg/L	0.08	0.33	0.15	< 0.05
Arsenic	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix			M16-My06374	M16-My06375	M16-My06376	M16-My06377
Eurofins mgt Sample No.			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	< 0.00005	0.00008	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.004	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.0	7.2	0.05	0.13
Iron (filtered)	0.05	mg/L	0.36	1.2	< 0.05	0.07
Lead	0.001	mg/L	< 0.001	0.007	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.010	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.010	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.007	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	1.0	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.005	0.078	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	18	230	5.6	10
Magnesium	0.5	mg/L	5.8	110	2.1	1.8
Potassium	0.5	mg/L	10	51	1.8	0.8
Sodium	0.5	mg/L	45	520	6.6	5.3

Client Sample ID			MW35 Water	SWL17-2 Water	SWL17-3 Water	SWL16-1 Water
Sample Matrix			M16-My06378	M16-My06379	M16-My06380	M16-My06381
Eurofins mgt Sample No.			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	102	57	91	93

Client Sample ID			MW35	SWL17-2	SWL17-3	SWL16-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06378	M16-My06379	M16-My06380	M16-My06381
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	63	38	40	< 10
Chloride	1	mg/L	72	77	77	94
Conductivity (at 25°C)	1	uS/cm	280	320	310	430
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	< 0.05	0.43
pH	0.1	pH Units	4.1	3.9	3.9	7.4
Phosphate total (as P)	0.05	mg/L	0.66	0.07	0.20	0.40
Phosphorus reactive (as P)	0.05	mg/L	0.50	< 0.05	< 0.05	0.40
Sulphate (as S)	5	mg/L	7.3	5.6	5.5	16
Total Dissolved Solids	10	mg/L	^{Q19} 440	^{Q19} 330	^{Q19} 300	^{Q19} 370
Turbidity	1	NTU	-	7.9	7.9	4.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	51
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	51
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.47	0.05	0.05	0.01
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.41
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.8	1.2	1.5	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.3	1.3	1.6	1.0
Total Nitrogen (as N)	0.2	mg/L	3.3	1.3	1.6	1.4
Heavy Metals						
Aluminium	0.05	mg/L	0.59	0.37	0.48	0.09
Aluminium (filtered)	0.05	mg/L	0.29	0.37	0.37	0.07
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.24	0.21	0.29	0.52
Iron (filtered)	0.05	mg/L	0.14	0.21	0.21	0.32
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006

Client Sample ID			MW35	SWL17-2	SWL17-3	SWL16-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06378	M16-My06379	M16-My06380	M16-My06381
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	0.0005	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	< 0.005	< 0.005	0.008
Zinc (filtered)	0.001	mg/L	0.003	0.001	0.001	0.007
Alkali Metals						
Calcium	0.5	mg/L	8.0	2.5	2.5	20
Magnesium	0.5	mg/L	6.0	6.1	6.3	7.6
Potassium	0.5	mg/L	7.4	1.4	1.5	15
Sodium	0.5	mg/L	25	32	33	38
Pathogens						
E.coli	1	MPN/100mL	-	M15<10	M15<10	700
Thermotolerant Coliforms	1	MPN/100mL	-	M15<10	M15<10	2500

Client Sample ID			SWL16-2	SWL16-3	QC104	QC105
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06382	M16-My06383	M16-My06384	M16-My06385
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-	-
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	104	102	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	-	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-	-

Client Sample ID			SWL16-2	SWL16-3	QC104	QC105
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06382	M16-My06383	M16-My06384	M16-My06385
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	14	-	-
Chloride	1	mg/L	120	210	-	-
Conductivity (at 25°C)	1	uS/cm	580	880	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.16	< 0.05	-	-
pH	0.1	pH Units	6.9	7.0	-	-
Phosphate total (as P)	0.05	mg/L	0.41	1.1	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.39	1.0	-	-
Sulphate (as S)	5	mg/L	28	36	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 510	^{Q19} 790	-	-
Turbidity	1	NTU	5.8	1.5	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	49	58	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	49	58	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.07	-	-
Nitrate (as N)	0.02	mg/L	0.13	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	2.0	2.1	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.0	2.2	-	-
Total Nitrogen (as N)	0.2	mg/L	2.2	2.2	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.20	0.21	-	-
Aluminium (filtered)	0.05	mg/L	0.16	0.14	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.92	0.30	-	-
Iron (filtered)	0.05	mg/L	0.48	0.25	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.008	-	-
Manganese (filtered)	0.005	mg/L	0.011	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.001	-	-
Nickel (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.010	0.002	< 0.001	< 0.001

Client Sample ID			SWL16-2	SWL16-3	QC104	QC105
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06382	M16-My06383	M16-My06384	M16-My06385
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	25	28	-	-
Magnesium	0.5	mg/L	11	17	-	-
Potassium	0.5	mg/L	19	22	-	-
Sodium	0.5	mg/L	65	110	-	-
Pathogens						
E.coli	1	MPN/100mL	230	190	-	-
Thermotolerant Coliforms	1	MPN/100mL	1700	730	-	-

Client Sample ID			QC106	QC111	SWL17-1	MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06386	M16-My06387	M16-My09425	M16-My09426
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	103	111	59	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Other Parameters						
Acidity (as CaCO3)	10	mg/L	< 10	40	51	47
Chloride	1	mg/L	130	78	78	80
Conductivity (at 25°C)	1	uS/cm	610	340	330	290
Nitrate & Nitrite (as N)	0.05	mg/L	0.16	< 0.05	-	< 0.05
pH	0.1	pH Units	6.8	3.8	3.8	4.7
Phosphate total (as P)	0.05	mg/L	0.60	0.17	0.14	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.56	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	27	5.4	5.2	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 500	^{Q19} 330	^{Q19} 310	^{Q19} 270
Turbidity	1	NTU	6.7	9.2	5.5	-

Client Sample ID			QC106	QC111	SWL17-1	MW40
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My06386	M16-My06387	M16-My09425	M16-My09426
Date Sampled			May 05, 2016	May 05, 2016	May 05, 2016	May 05, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	47	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	47	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.07	0.06	0.04	0.39
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	< 0.05	-
Nitrate (as N)	0.02	mg/L	0.16	< 0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.6	1.4	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	1.7	1.4	1.2
Total Nitrogen (as N)	0.2	mg/L	1.7	1.7	1.4	1.2
Heavy Metals						
Aluminium	0.05	mg/L	0.22	0.51	0.50	1.4
Aluminium (filtered)	0.05	mg/L	0.20	0.41	0.39	1.2
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.91	0.28	0.28	0.37
Iron (filtered)	0.05	mg/L	0.49	0.20	0.20	0.33
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.013	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.012	0.001	0.003	0.001
Alkali Metals						
Calcium	0.5	mg/L	26	2.5	2.5	2.2
Magnesium	0.5	mg/L	11	5.9	6.1	5.6
Potassium	0.5	mg/L	18	1.5	1.4	1.8
Sodium	0.5	mg/L	69	31	33	36
Pathogens						
E.coli	1	MPN/100mL	250	M15<10	M15<10	-
Thermotolerant Coliforms	1	MPN/100mL	2400	M15<10	M15<10	-

Client Sample ID			MW41
Sample Matrix			Water
Eurofins mgt Sample No.			M16-My09427
Date Sampled			May 05, 2016
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	79
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
Acidity (as CaCO3)			
Acidity (as CaCO3)	10	mg/L	130
Chloride	1	mg/L	190
Conductivity (at 25°C)	1	uS/cm	780
Nitrate & Nitrite (as N)	0.05	mg/L	2.5
pH	0.1	pH Units	3.4
Phosphate total (as P)	0.05	mg/L	0.70
Phosphorus reactive (as P)	0.05	mg/L	0.52
Sulphate (as S)	5	mg/L	12
Total Dissolved Solids	10	mg/L	^{Q19} 740
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20
Nitrogens (speciated)			
Ammonia (as N)	0.01	mg/L	0.35
Nitrate (as N)	0.02	mg/L	2.4
Nitrite (as N)	0.02	mg/L	0.12
Organic Nitrogen (as N)	0.2	mg/L	2.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.0
Total Nitrogen (as N)	0.2	mg/L	5.5
Heavy Metals			
Aluminium	0.05	mg/L	2.1
Aluminium (filtered)	0.05	mg/L	1.4
Arsenic	0.001	mg/L	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001

Client Sample ID			MW41
Sample Matrix			Water
Eurofins mgt Sample No.			M16-My09427
Date Sampled			May 05, 2016
Test/Reference	LOR	Unit	
Heavy Metals			
Cadmium	0.00005	mg/L	0.00013
Cadmium (filtered)	0.00005	mg/L	0.00010
Chromium	0.001	mg/L	0.003
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	0.004
Copper (filtered)	0.001	mg/L	0.002
Iron	0.05	mg/L	0.70
Iron (filtered)	0.05	mg/L	0.35
Lead	0.001	mg/L	0.002
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury	0.0001	mg/L	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.002
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	0.002
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.012
Zinc (filtered)	0.001	mg/L	0.011
Alkali Metals			
Calcium	0.5	mg/L	5.7
Magnesium	0.5	mg/L	13
Potassium	0.5	mg/L	2.0
Sodium	0.5	mg/L	98

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 10, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 10, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 10, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 10, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 10, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 10, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 10, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 10, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 10, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	May 10, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 10, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 10, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	May 10, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 10, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 10, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 10, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	May 10, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 11, 2016	28 Day

Description	Testing Site	Extracted	Holding Time
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 10, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	May 10, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	May 10, 2016	24 Hour

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	87			70-130	Pass	
TRH C10-C14	%	105			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	96			70-130	Pass	
Toluene	%	83			70-130	Pass	
Ethylbenzene	%	85			70-130	Pass	
m&p-Xylenes	%	86			70-130	Pass	
Xylenes - Total	%	86			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	71			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	106			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	102			70-130	Pass	
Chloride	%	108			70-130	Pass	
Nitrate & Nitrite (as N)	%	96			70-130	Pass	
Phosphate total (as P)	%	104			70-130	Pass	
Sulphate (as S)	%	114			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	119			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	98			70-130	Pass		
Nitrate & Nitrite (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	102			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	91			80-120	Pass		
Aluminium (filtered)	%	91			80-120	Pass		
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	94			80-120	Pass		
Cadmium (filtered)	%	100			70-130	Pass		
Chromium	%	96			80-120	Pass		
Chromium (filtered)	%	96			80-120	Pass		
Copper	%	95			80-120	Pass		
Copper (filtered)	%	95			80-120	Pass		
Iron	%	95			80-120	Pass		
Iron (filtered)	%	95			80-120	Pass		
Lead	%	96			80-120	Pass		
Lead (filtered)	%	96			80-120	Pass		
Manganese	%	93			80-120	Pass		
Manganese (filtered)	%	93			80-120	Pass		
Mercury	%	94			75-125	Pass		
Mercury (filtered)	%	94			70-130	Pass		
Nickel	%	94			80-120	Pass		
Nickel (filtered)	%	94			80-120	Pass		
Selenium	%	96			80-120	Pass		
Selenium (filtered)	%	96			80-120	Pass		
Zinc	%	94			80-120	Pass		
Zinc (filtered)	%	94			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	111			70-130	Pass		
Potassium	%	97			70-130	Pass		
Sodium	%	99			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My11160	NCP	%	94		70-130	Pass	
TRH C10-C14	M16-My06086	NCP	%	121		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My11160	NCP	%	97		70-130	Pass	
Toluene	M16-My11160	NCP	%	92		70-130	Pass	
Ethylbenzene	M16-My11160	NCP	%	91		70-130	Pass	
m&p-Xylenes	M16-My11160	NCP	%	94		70-130	Pass	
o-Xylene	M16-My11160	NCP	%	93		70-130	Pass	
Xylenes - Total	M16-My11160	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My11160	NCP	%	75		70-130	Pass	
TRH C6-C10	M16-My11160	NCP	%	89		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-My06086	NCP	%	122		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	M16-My06370	CP	%	94		70-130	Pass	
Phosphate total (as P)	M16-My05884	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	S16-My07744	NCP	%	126		70-130	Pass	
Total Alkalinity (as CaCO3)	S16-My07744	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-My06370	CP	%	94		70-130	Pass	
Nitrate (as N)	M16-My06370	CP	%	94		70-130	Pass	
Nitrite (as N)	M16-My06370	CP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-My05884	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	B16-My08192	NCP	%	99		75-125	Pass	
Arsenic (filtered)	M16-My08718	NCP	%	95		70-130	Pass	
Chromium	B16-My08192	NCP	%	86		75-125	Pass	
Chromium (filtered)	M16-My08718	NCP	%	96		70-130	Pass	
Copper	B16-My08192	NCP	%	81		75-125	Pass	
Copper (filtered)	M16-My08718	NCP	%	93		70-130	Pass	
Lead	B16-My08192	NCP	%	79		75-125	Pass	
Lead (filtered)	M16-My08718	NCP	%	95		70-130	Pass	
Manganese	B16-My08192	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-My08718	NCP	%	89		70-130	Pass	
Mercury	B16-My08192	NCP	%	80		70-130	Pass	
Nickel	B16-My08192	NCP	%	84		75-125	Pass	
Nickel (filtered)	M16-My08718	NCP	%	92		70-130	Pass	
Selenium	B16-My08192	NCP	%	96		75-125	Pass	
Selenium (filtered)	M16-My08718	NCP	%	97		70-130	Pass	
Zinc	B16-My08192	NCP	%	85		75-125	Pass	
Zinc (filtered)	M16-My08718	NCP	%	93		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-My06374	CP	%	121		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My06379	CP	%	92		70-130	Pass	
Sulphate (as S)	M16-My06379	CP	%	104		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	S16-My14538	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My06379	CP	%	86		70-130	Pass	
Magnesium	M16-My06379	CP	%	87		70-130	Pass	
Potassium	M16-My06379	CP	%	82		70-130	Pass	
Sodium	M16-My06379	CP	%	89		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My06380	CP	%	88		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrate & Nitrite (as N)	M16-My06380	CP	%	91			70-130	Pass	
Sulphate (as S)	M16-My06380	CP	%	102			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-My06380	CP	%	96			70-130	Pass	
Nitrate (as N)	M16-My06380	CP	%	90			70-130	Pass	
Nitrite (as N)	M16-My06380	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-My09426	CP	%	77			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-My10930	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M16-My06020	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My06020	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My06020	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-My10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-My10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-My10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-My10930	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-My10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-My10930	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-My10930	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M16-My10930	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My06020	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My06020	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My06020	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M16-My06370	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphate total (as P)	M16-My05507	NCP	mg/L	0.69	0.70	1.0	30%	Pass	
Total Dissolved Solids	M16-My06370	CP	mg/L	1800	1700	4.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My06370	CP	mg/L	0.38	0.35	9.0	30%	Pass	
Nitrate (as N)	M16-My06370	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-My06370	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-My08719	NCP	mg/L	0.38	0.41	7.0	30%	Pass	
Arsenic	B16-My08192	NCP	mg/L	0.001	0.001	6.0	30%	Pass	
Arsenic (filtered)	M16-My08718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-My21483	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	B16-My08192	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-My08718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B16-My08192	NCP	mg/L	0.001	0.001	13	30%	Pass	
Copper (filtered)	M16-My08718	NCP	mg/L	0.007	0.007	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron	M16-My08719	NCP	mg/L	1.2	1.2	1.0	30%	Pass
Lead	B16-My08192	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-My08718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	B16-My08192	NCP	mg/L	0.048	0.048	1.0	30%	Pass
Manganese (filtered)	M16-My08718	NCP	mg/L	0.048	0.049	3.0	30%	Pass
Mercury	B16-My08192	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-My08718	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	B16-My08192	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel (filtered)	M16-My08718	NCP	mg/L	0.001	0.001	<1	30%	Pass
Selenium	B16-My08192	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-My08718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	B16-My08192	NCP	mg/L	0.005	0.005	1.0	30%	Pass
Zinc (filtered)	M16-My08718	NCP	mg/L	0.032	0.033	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My06372	CP	uS/cm	1400	1400	2.0	30%	Pass
pH	M16-My06372	CP	pH Units	7.8	7.8	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My06372	CP	mg/L	240	230	4.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My06372	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My06372	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My06372	CP	mg/L	240	230	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My06373	CP	mg/L	34	37	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My06374	CP	mg/L	0.53	0.52	1.3	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-My06379	CP	mg/L	77	79	2.3	30%	Pass
Sulphate (as S)	M16-My06379	CP	mg/L	5.6	5.2	7.2	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My06379	CP	mg/L	2.5	2.5	1.0	30%	Pass
Magnesium	M16-My06379	CP	mg/L	6.1	6.6	7.0	30%	Pass
Potassium	M16-My06379	CP	mg/L	1.4	1.4	4.0	30%	Pass
Sodium	M16-My06379	CP	mg/L	32	34	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-My06380	CP	mg/L	77	78	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-My06380	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-My06380	CP	mg/L	5.5	5.2	5.8	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-My06380	CP	mg/L	0.05	0.05	5.0	30%	Pass
Nitrate (as N)	M16-My06380	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-My06380	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-My06382	CP	NTU	5.8	6.2	7.0	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My06383	CP	mg/L	14	13	10	30%	Pass
Phosphorus reactive (as P)	M16-My06383	CP	mg/L	1.0	3.5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My06386	CP	mg/L	500	520	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My06387	CP	uS/cm	340	320	4.0	30%	Pass
pH	M16-My06387	CP	pH Units	3.8	3.9	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My06387	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My06387	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My06387	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My06387	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My09426	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	No
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 9, 2016 8:26 AM**
Eurofins | mgt reference: **499682**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Richelle Bunbury

Report 499682-W
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 09, 2016

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-My08252	M16-My08253	M16-My08254	M16-My08255
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	97	82	93	72
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity & Chloride						
Acidity (as CaCO3)	10	mg/L	28	35	50	43
Chloride	1	mg/L	59	28	58	25
Conductivity & Nitrate						
Conductivity (at 25°C)	1	uS/cm	260	200	300	230
Nitrate & Nitrite (as N)	0.05	mg/L	2.6	< 0.05	0.08	11
pH						
pH	0.1	pH Units	4.4	3.8	4.2	4.0
Phosphate & Phosphorus						
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	0.07	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate & Solids						
Sulphate (as S)	5	mg/L	6.0	10	13	11
Total Dissolved Solids	10	mg/L	^{Q19} 220	^{Q19} 200	^{Q19} 240	150

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-My08252	M16-My08253	M16-My08254	M16-My08255
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.20	0.27	0.05
Nitrate (as N)	0.02	mg/L	2.6	< 0.02	0.04	11
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.5	^{G01} < 2	1.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.7	^{G01} < 2	2.0
Total Nitrogen (as N)	0.2	mg/L	3.2	0.7	^{G01} < 2	13
Heavy Metals						
Aluminium	0.05	mg/L	0.99	0.60	2.7	4.4
Aluminium (filtered)	0.05	mg/L	0.35	0.44	1.3	1.2
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.001	0.006	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.64	1.2	0.41
Iron (filtered)	0.05	mg/L	< 0.05	0.15	0.54	< 0.05
Lead	0.001	mg/L	0.002	< 0.001	0.002	0.006
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.014
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.003	0.011
Alkali Metals						
Calcium	0.5	mg/L	2.4	2.3	4.3	7.3
Magnesium	0.5	mg/L	6.5	6.2	6.6	5.4
Potassium	0.5	mg/L	2.6	3.0	1.6	3.1
Sodium	0.5	mg/L	33	13	32	12

Client Sample ID			MW24 Water	MW23 Water	MW18 Water	MW16 Water
Sample Matrix			M16-My08256	M16-My08257	M16-My08258	M16-My08259
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	67	65	78	76
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	88	17	41	62
Chloride	1	mg/L	150	40	69	64
Conductivity (at 25°C)	1	uS/cm	640	240	240	330
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	4.8	< 0.05	6.5
pH	0.1	pH Units	4.4	5.3	4.5	4.2
Phosphate total (as P)	0.05	mg/L	0.16	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	24	9.6	6.3	12
Total Dissolved Solids	10	mg/L	^{Q19} 460	160	^{Q19} 180	210
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.32	0.01	0.12	0.02
Nitrate (as N)	0.02	mg/L	< 0.02	4.7	< 0.02	6.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.2	< 0.2	5.7	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.5	< 0.2	5.8	1.0
Total Nitrogen (as N)	0.2	mg/L	2.5	4.7	5.8	7.4
Heavy Metals						
Aluminium	0.05	mg/L	19	7.9	4.8	14
Aluminium (filtered)	0.05	mg/L	1.1	0.21	0.76	5.7
Arsenic	0.001	mg/L	0.003	< 0.001	0.002	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW24 Water	MW23 Water	MW18 Water	MW16 Water
Sample Matrix			M16-My08256	M16-My08257	M16-My08258	M16-My08259
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	0.0097	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.035	0.007	0.006	0.015
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.012	0.002	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.2	0.60	3.2	3.0
Iron (filtered)	0.05	mg/L	0.14	< 0.05	1.7	0.19
Lead	0.001	mg/L	0.021	0.004	0.007	0.044
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.009
Manganese	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0005	0.0002	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.008	0.003	0.002	0.005
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.003
Selenium	0.001	mg/L	0.005	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.005
Zinc (filtered)	0.001	mg/L	0.003	< 0.001	0.001	0.003
Alkali Metals						
Calcium	0.5	mg/L	6.7	12	2.1	8.4
Magnesium	0.5	mg/L	14	3.0	3.7	5.3
Potassium	0.5	mg/L	1.7	3.5	1.5	1.4
Sodium	0.5	mg/L	82	20	35	32

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-My08260	M16-My08261	M16-My08262	M16-My08263
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	90	77	78	114

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-My08260	M16-My08261	M16-My08262	M16-My08263
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	34	46	51	47
Chloride						
Chloride	1	mg/L	48	51	54	53
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	280	240	280	270
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	< 0.05	< 0.05
pH						
pH	0.1	pH Units	3.9	4.3	3.8	4.1
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)						
Sulphate (as S)	5	mg/L	22	11	16	20
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	200	^{Q19} 180	170	^{Q19} 200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)						
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)						
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)						
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	0.23	0.02	0.06	0.05
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	< 0.02	2.4	< 0.02	< 0.02
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.9	0.7	< 0.2
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	1.9	0.8	< 0.2
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	1.6	4.3	0.8	< 0.2
Parent Set for NOx and NH3						
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	-	2.4	-	-
Heavy Metals						
Aluminium						
Aluminium	0.05	mg/L	16	48	10	5.5
Aluminium (filtered)						
Aluminium (filtered)	0.05	mg/L	0.49	0.58	2.0	3.4
Arsenic						
Arsenic	0.001	mg/L	0.006	0.005	0.003	0.005
Arsenic (filtered)						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium						
Chromium	0.001	mg/L	0.028	0.053	0.012	0.003
Chromium (filtered)						
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper						
Copper	0.001	mg/L	0.003	0.003	0.001	< 0.001
Copper (filtered)						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron						
Iron	0.05	mg/L	10	11	12	3.9
Iron (filtered)						
Iron (filtered)	0.05	mg/L	0.61	0.30	1.3	1.1
Lead						
Lead	0.001	mg/L	0.044	0.051	0.010	< 0.001
Lead (filtered)						
Lead (filtered)	0.001	mg/L	0.008	0.003	0.002	< 0.001
Manganese						
Manganese	0.005	mg/L	0.011	< 0.005	< 0.005	< 0.005
Manganese (filtered)						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M16-My08260	M16-My08261	M16-My08262	M16-My08263
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.0001	mg/L	0.0002	0.0005	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.005	0.006	0.006
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.005
Selenium	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.003	< 0.001	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	5.9	11	4.0	1.2
Magnesium	0.5	mg/L	8.0	4.6	4.6	6.3
Potassium	0.5	mg/L	2.0	1.3	1.2	0.8
Sodium	0.5	mg/L	24	25	27	26

Client Sample ID			MW11 Water	MW10 Water	MW9 Water	QC113 Water
Sample Matrix			M16-My08264	M16-My08265	M16-My08266	M16-My08267
Eurofins mgt Sample No.			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	75	94	92	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
TRH C6-C10	0.02	mg/L	< 0.02	0.05	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	0.05	< 0.02	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Acidity & Conductivity						
Acidity (as CaCO3)	10	mg/L	68	33	30	-
Chloride	1	mg/L	120	29	20	-
Conductivity (at 25°C)	1	uS/cm	640	170	93	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-

Client Sample ID			MW11	MW10	MW9	QC113
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My08264	M16-My08265	M16-My08266	M16-My08267
Date Sampled			May 06, 2016	May 06, 2016	May 06, 2016	May 06, 2016
Test/Reference	LOR	Unit				
pH	0.1	pH Units	4.3	6.3	5.5	-
Phosphate total (as P)	0.05	mg/L	< 0.05	0.13	0.17	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	57	5.9	< 5	-
Total Dissolved Solids	10	mg/L	490	^{Q19} 180	^{Q19} 98	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	35	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	35	< 20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.11	1.0	0.33	-
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	0.05	-
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.3	2.2	2.5	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	3.2	2.8	-
Total Nitrogen (as N)	0.2	mg/L	0.4	3.2	2.9	-
Heavy Metals						
Aluminium	0.05	mg/L	10	13	22	-
Aluminium (filtered)	0.05	mg/L	3.9	0.43	0.34	< 0.05
Arsenic	0.001	mg/L	0.002	0.007	0.004	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.025	0.023	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.005	0.006	-
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	14	29	3.3	-
Iron (filtered)	0.05	mg/L	7.8	2.7	1.00	< 0.05
Lead	0.001	mg/L	0.016	0.012	0.032	-
Lead (filtered)	0.001	mg/L	0.006	0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.016	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	0.012	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	0.0002	0.0002	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	0.006	0.005	-
Nickel (filtered)	0.001	mg/L	0.008	0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	0.002	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.027	0.17	-
Zinc (filtered)	0.001	mg/L	0.002	0.010	0.086	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	2.3	14	4.7	-
Magnesium	0.5	mg/L	24	3.9	1.6	-
Potassium	0.5	mg/L	0.8	1.6	1.1	-
Sodium	0.5	mg/L	72	9.8	7.8	-

Client Sample ID			QC114	QC115
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-My08268	M16-My08269
Date Sampled			May 06, 2016	May 06, 2016
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	-	< 0.02
TRH C10-C14	0.05	mg/L	-	< 0.05
TRH C15-C28	0.1	mg/L	-	< 0.1
TRH C29-C36	0.1	mg/L	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	< 0.1
BTEX				
Benzene	0.001	mg/L	-	< 0.001
Toluene	0.001	mg/L	-	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001
Xylenes - Total	0.003	mg/L	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	70
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01
TRH C6-C10	0.02	mg/L	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	0.05	mg/L	-	< 0.05
TRH >C16-C34	0.1	mg/L	-	< 0.1
TRH >C34-C40	0.1	mg/L	-	< 0.1
Acidity (as CaCO3)				
Acidity (as CaCO3)	10	mg/L	-	42
Chloride	1	mg/L	-	73
Conductivity (at 25°C)	1	uS/cm	-	240
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05
pH	0.1	pH Units	-	4.6
Phosphate total (as P)	0.05	mg/L	-	0.07
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05
Sulphate (as S)	5	mg/L	-	6.3
Total Dissolved Solids	10	mg/L	-	160
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	< 10
Total Alkalinity (as CaCO3)	20	mg/L	-	< 20
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	-	0.12
Nitrate (as N)	0.02	mg/L	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	0.5
Total Nitrogen (as N)	0.2	mg/L	-	0.5
Heavy Metals				
Aluminium	0.05	mg/L	-	44
Aluminium (filtered)	0.05	mg/L	< 0.05	0.85
Arsenic	0.001	mg/L	-	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			QC114	QC115
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-My08268	M16-My08269
Date Sampled			May 06, 2016	May 06, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Cadmium	0.00005	mg/L	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.050
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.005
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	-	7.2
Iron (filtered)	0.05	mg/L	< 0.05	1.7
Lead	0.001	mg/L	-	0.069
Lead (filtered)	0.001	mg/L	< 0.001	0.003
Manganese	0.005	mg/L	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	0.0006
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.012
Nickel (filtered)	0.001	mg/L	< 0.001	0.002
Selenium	0.001	mg/L	-	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	-	< 0.005
Zinc (filtered)	0.001	mg/L	< 0.001	0.001
Alkali Metals				
Calcium	0.5	mg/L	-	2.4
Magnesium	0.5	mg/L	-	4.2
Potassium	0.5	mg/L	-	1.5
Sodium	0.5	mg/L	-	33

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 12, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 09, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 09, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 12, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 10, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 09, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 10, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 10, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 09, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	May 09, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 09, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 09, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 10, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 10, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 10, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 10, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 10, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	May 10, 2016	7 Day
Parent Set for NO _x and NH ₃	Melbourne	May 09, 2016	0 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 09, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 09, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Parent Set for NOx and NH₃							
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	mg/L	< 0.00005		0.00005	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.005		0.005	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	101		70-130	Pass	
TRH C10-C14	%	125		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	118		70-130	Pass	
Toluene	%	98		70-130	Pass	
Ethylbenzene	%	101		70-130	Pass	
m&p-Xylenes	%	102		70-130	Pass	
Xylenes - Total	%	100		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	74		70-130	Pass	
TRH C6-C10	%	95		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	%	125		70-130	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	102		70-130	Pass	
Chloride	%	109		70-130	Pass	
Nitrate & Nitrite (as N)	%	91		70-130	Pass	
Phosphate total (as P)	%	105		70-130	Pass	
Sulphate (as S)	%	116		70-130	Pass	
Total Dissolved Solids	%	96		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Total Alkalinity (as CaCO ₃)	%	116		70-130	Pass	
LCS - % Recovery						

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrogens (speciated)								
Ammonia (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	91			70-130	Pass		
Nitrite (as N)	%	97			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	92			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	97			80-120	Pass		
Arsenic	%	101			80-120	Pass		
Arsenic (filtered)	%	101			80-120	Pass		
Cadmium (filtered)	%	100			70-130	Pass		
Chromium	%	101			80-120	Pass		
Chromium (filtered)	%	101			80-120	Pass		
Copper	%	98			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	103			80-120	Pass		
Iron (filtered)	%	103			80-120	Pass		
Lead	%	100			80-120	Pass		
Lead (filtered)	%	100			80-120	Pass		
Manganese	%	102			80-120	Pass		
Manganese (filtered)	%	102			80-120	Pass		
Mercury	%	93			75-125	Pass		
Mercury (filtered)	%	93			70-130	Pass		
Nickel	%	100			80-120	Pass		
Nickel (filtered)	%	100			80-120	Pass		
Selenium	%	101			80-120	Pass		
Selenium (filtered)	%	101			80-120	Pass		
Zinc	%	98			80-120	Pass		
Zinc (filtered)	%	98			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	107			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	102			70-130	Pass		
Sodium	%	105			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	M16-My08252	CP	%	81		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	S16-My07744	NCP	%	126		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-My08252	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-My08252	CP	%	80		70-130	Pass	
Nitrite (as N)	M16-My08252	CP	%	95		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-My07870	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic (filtered)	B16-My08369	NCP	%	106		70-130	Pass	
Chromium (filtered)	B16-My08369	NCP	%	108		70-130	Pass	
Copper (filtered)	B16-My08369	NCP	%	105		70-130	Pass	
Iron (filtered)	M16-My08252	CP	%	94		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	B16-My08369	NCP	%	105		70-130	Pass	
Manganese (filtered)	B16-My08369	NCP	%	105		70-130	Pass	
Mercury (filtered)	M16-My08290	NCP	%	87		70-130	Pass	
Nickel (filtered)	B16-My08369	NCP	%	104		70-130	Pass	
Selenium (filtered)	B16-My08369	NCP	%	108		70-130	Pass	
Zinc (filtered)	B16-My08369	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	M16-My08253	CP	%	101		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-My08253	CP	%	101		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My08257	CP	%	110		70-130	Pass	
Sulphate (as S)	M16-My08257	CP	%	106		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My08259	CP	%	104		70-130	Pass	
Phosphate total (as P)	M16-My08259	CP	%	112		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My08259	CP	%	95		70-130	Pass	
Magnesium	M16-My08259	CP	%	93		70-130	Pass	
Potassium	M16-My08259	CP	%	90		70-130	Pass	
Sodium	M16-My08259	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-My08262	CP	%	83		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-My08263	CP	%	70		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My13838	NCP	%	83		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My13838	NCP	%	79		70-130	Pass	
Toluene	M16-My13838	NCP	%	80		70-130	Pass	
Ethylbenzene	M16-My13838	NCP	%	79		70-130	Pass	
m&p-Xylenes	M16-My13838	NCP	%	76		70-130	Pass	
o-Xylene	M16-My13838	NCP	%	78		70-130	Pass	
Xylenes - Total	M16-My13838	NCP	%	77		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My13838	NCP	%	72		70-130	Pass	
TRH C6-C10	M16-My13838	NCP	%	77		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrate & Nitrite (as N)	M16-My08266	CP	%	85		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-My08266	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-My08266	CP	%	85		70-130	Pass	
Nitrite (as N)	M16-My08266	CP	%	92		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-My08252	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My08252	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My08252	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My08252	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My08252	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My08252	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrate & Nitrite (as N)	M16-My08252	CP	mg/L	2.6	2.6	<1	30%	Pass	
Total Dissolved Solids	M16-My08202	NCP	mg/L	2700	3200	17	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My08252	CP	mg/L	0.13	0.12	6.0	30%	Pass	
Nitrate (as N)	M16-My08252	CP	mg/L	2.6	2.6	<1	30%	Pass	
Nitrite (as N)	M16-My08252	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	B16-My06205	NCP	mg/L	2.1	2.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-My21483	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-My08369	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Iron	M16-My08292	NCP	mg/L	1.9	1.8	6.0	30%	Pass	
Iron (filtered)	M16-My08252	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	B16-My08369	NCP	mg/L	0.035	0.036	3.0	30%	Pass	
Mercury	M16-My03634	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	B16-My08369	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	B16-My08369	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-My08257	CP	mg/L	40	41	<1	30%	Pass	
Sulphate (as S)	M16-My08257	CP	mg/L	9.6	9.3	3.6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-My08259	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-My08259	CP	mg/L	8.4	9.7	15	30%	Pass	
Magnesium	M16-My08259	CP	mg/L	5.3	6.1	14	30%	Pass	
Sodium	M16-My08259	CP	mg/L	32	29	15	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-My08261	CP	uS/cm	240	240	3.0	30%	Pass	
pH	M16-My08261	CP	pH Units	4.3	4.3	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My08261	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My08261	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My08261	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My08261	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My08262	CP	mg/L	51	52	2.0	30%	Pass
Phosphorus reactive (as P)	M16-My08262	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-My08262	CP	mg/L	2.0	2.1	7.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M16-My13112	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M16-My13112	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M16-My13112	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M16-My13112	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M16-My13112	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M16-My13112	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M16-My13112	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-My13112	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-My13112	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M16-My08266	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-My08266	CP	mg/L	0.33	0.33	1.0	30%	Pass
Nitrate (as N)	M16-My08266	CP	mg/L	0.05	0.04	20	30%	Pass
Nitrite (as N)	M16-My08266	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **May 10, 2016 8:06 AM**
Eurofins | mgt reference: **499798**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **499798-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 10, 2016

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-My09394	M16-My09395	M16-My09396	M16-My09397
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	0.17	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	91	85	91	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	16	31	34	20
Chloride						
Chloride	1	mg/L	56	36	16	16
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	430	230	220	120
pH						
pH	0.1	pH Units	6.9	5.8	6.5	6.5
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.12	< 0.05	0.24	0.38
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Sulphate (as S)						
Sulphate (as S)	5	mg/L	10	10	6.4	< 5
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	290	140	^{Q19} 180	76
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	85	25	78	37
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	85	25	78	37

Client Sample ID			MW1	MW2	MW3	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09394	M16-My09395	M16-My09396	M16-My09397
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.26	0.14	0.61
Nitrate & Nitrite (as N)	0.05	mg/L	6.4	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	6.3	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.10	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.6	0.3	1.5	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	0.6	1.6	1.6
Total Nitrogen (as N)	0.2	mg/L	8.1	0.6	1.6	1.6
Heavy Metals						
Aluminium	0.05	mg/L	1.9	5.1	0.65	0.72
Aluminium (filtered)	0.05	mg/L	< 0.05	0.11	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.005	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.25	0.66	0.07	0.09
Iron (filtered)	0.05	mg/L	< 0.05	0.33	< 0.05	< 0.05
Lead	0.001	mg/L	0.003	0.008	< 0.001	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.028	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.027	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	0.007	0.026	< 0.005
Zinc (filtered)	0.001	mg/L	0.001	< 0.001	0.006	0.004
Alkali Metals						
Calcium	0.5	mg/L	29	8.2	33	14
Magnesium	0.5	mg/L	4.5	8.9	3.1	1.8
Potassium	0.5	mg/L	34	1.4	1.9	< 0.5
Sodium	0.5	mg/L	25	17	8.0	5.9

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-My09398	M16-My09399	M16-My09400	M16-My09401
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	73	55	68	65
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	55	190	77	100
Chloride	1	mg/L	42	86	89	82
Conductivity (at 25°C)	1	uS/cm	250	460	390	440
pH	0.1	pH Units	4.1	3.6	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.19	0.06	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	26	16	33
Total Dissolved Solids	10	mg/L	150	270	^{Q19} 340	290
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.17	0.07	0.16
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.8	0.4	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.0	0.5	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	1.0	0.5	0.4
Heavy Metals						
Aluminium	0.05	mg/L	3.9	65	21	23
Aluminium (filtered)	0.05	mg/L	1.5	11	7.5	4.2
Arsenic	0.001	mg/L	0.001	0.008	0.003	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-My09398	M16-My09399	M16-My09400	M16-My09401
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.096	0.014	0.015
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.016	0.004	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.7	1.7	2.5	24
Iron (filtered)	0.05	mg/L	0.93	0.06	1.2	22
Lead	0.001	mg/L	0.019	0.12	0.022	0.010
Lead (filtered)	0.001	mg/L	0.005	0.002	0.004	0.003
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0011	0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.029	0.011	0.008
Nickel (filtered)	0.001	mg/L	< 0.001	0.009	0.008	0.006
Selenium	0.001	mg/L	< 0.001	0.010	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.014	0.006	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.007	0.004	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	5.6	0.6	< 0.5	5.6
Magnesium	0.5	mg/L	4.7	2.7	4.1	5.5
Potassium	0.5	mg/L	1.2	< 0.5	0.6	1.1
Sodium	0.5	mg/L	27	57	50	47

Client Sample ID			MW22 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	63	58	55	68

Client Sample ID			MW22	SWL1-1	SWL2-1	SWL2-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	100	11	< 10	< 10
Chloride	1	mg/L	110	52	67	64
Conductivity (at 25°C)	1	uS/cm	510	280	320	320
pH	0.1	pH Units	4.0	6.8	6.8	6.8
Phosphate total (as P)	0.05	mg/L	< 0.05	0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	35	10	14	14
Total Dissolved Solids	10	mg/L	360	180	180	180
Turbidity	1	NTU	-	6.6	< 1	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	43	25	24
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	43	25	24
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.17	0.03	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.24	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.19	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.02	0.04	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.3	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.7	0.3	0.4
Heavy Metals						
Aluminium	0.05	mg/L	7.5	< 0.05	0.19	0.25
Aluminium (filtered)	0.05	mg/L	6.2	< 0.05	0.17	0.17
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	17	0.10	0.11	0.12
Iron (filtered)	0.05	mg/L	14	< 0.05	0.07	0.07
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			MW22 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.016	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.015	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.025	0.005	0.006
Zinc (filtered)	0.001	mg/L	0.002	0.019	0.003	0.004
Alkali Metals						
Calcium	0.5	mg/L	14	13	5.2	5.2
Magnesium	0.5	mg/L	6.7	5.7	6.9	6.6
Potassium	0.5	mg/L	1.6	3.5	2.1	2.1
Sodium	0.5	mg/L	55	28	49	49
Pathogens						
E.coli	1	MPN/100mL	-	52	20	10
Thermotolerant Coliforms	1	MPN/100mL	-	98	20	72

Client Sample ID			SWL2-3 Water	SWL3-1 Water	SWL3-2 Water	SWL3-3 Water
Sample Matrix			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	61	60	56	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			SWL2-3	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	70	63	62	63
Conductivity (at 25°C)	1	uS/cm	340	350	350	340
pH	0.1	pH Units	6.8	7.0	7.3	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	23	7.4	7.9	7.7
Total Dissolved Solids	10	mg/L	190	220	240	230
Turbidity	1	NTU	< 1	2.3	1.9	2.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	25	67	66	61
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	25	67	66	61
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.07	0.05	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.5	0.7	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.8	0.6
Total Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.8	0.6
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.35	0.35	0.36
Aluminium (filtered)	0.05	mg/L	0.15	0.28	0.25	0.31
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.10	0.25	0.26	0.25
Iron (filtered)	0.05	mg/L	0.06	0.18	0.18	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.045	< 0.005
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.003	0.002

Client Sample ID			SWL2-3	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	5.2	12	12	13
Magnesium	0.5	mg/L	6.8	7.0	7.0	7.5
Potassium	0.5	mg/L	2.1	2.1	1.9	2.0
Sodium	0.5	mg/L	61	48	48	40
Pathogens						
E.coli	1	MPN/100mL	10	74	84	74
Thermotolerant Coliforms	1	MPN/100mL	120	190	300	210

Client Sample ID			QC116	QC117	QC118	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09410	M16-My09411	M16-My09412	M16-My09413
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	0.04
TRH C10-C14	0.05	mg/L	-	-	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	-	-	< 0.1	0.2
TRH C29-C36	0.1	mg/L	-	-	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	0.2
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	0.012
Toluene	0.001	mg/L	-	-	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	-	-	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	< 0.002
o-Xylene	0.001	mg/L	-	-	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	-	-	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	-	64	108
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	-	-	< 0.02	0.04
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	0.03
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	0.2
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	< 0.1
Other Parameters						
Acidity (as CaCO3)	10	mg/L	-	-	17	81
Chloride	1	mg/L	-	-	56	90
Conductivity (at 25°C)	1	uS/cm	-	-	440	790
pH	0.1	pH Units	-	-	6.7	6.5
Phosphate total (as P)	0.05	mg/L	-	-	0.17	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	-	11	52
Total Dissolved Solids	10	mg/L	-	-	300	540

Client Sample ID			QC116	QC117	QC118	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09410	M16-My09411	M16-My09412	M16-My09413
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	80	110
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	80	110
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	-	0.07	1.2
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	6.5	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	6.4	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	0.10	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-		0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.6	2.1
Total Nitrogen (as N)	0.2	mg/L	-	-		2.1
Heavy Metals						
Aluminium	0.05	mg/L	-	-	7.5	1.1
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.22
Arsenic	0.001	mg/L	-	-	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.011	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	0.004	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	1.1	1.1
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.05	0.54
Lead	0.001	mg/L	-	-	0.010	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	-	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.003	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	-	-	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	0.016	0.006
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	-	-	30	53
Magnesium	0.5	mg/L	-	-	4.7	7.6
Potassium	0.5	mg/L	-	-	33	14
Sodium	0.5	mg/L	-	-	24	79

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 13, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 11, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 11, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 13, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 12, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 11, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 12, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 12, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 11, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	May 11, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 11, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 11, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	May 10, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 12, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 11, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 11, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	May 10, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	May 10, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	May 24, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 24, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	128			70-130	Pass	
TRH C10-C14	%	70			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	118			70-130	Pass	
Toluene	%	121			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	111			70-130	Pass	
Xylenes - Total	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	89			70-130	Pass	
TRH C6-C10	%	122			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	70			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	103			70-130	Pass	
Chloride	%	111			70-130	Pass	
Phosphate total (as P)	%	96			70-130	Pass	
Sulphate (as S)	%	113			70-130	Pass	
Total Dissolved Solids	%	95			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	122			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	98			70-130	Pass	
Nitrate & Nitrite (as N)	%	91			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Nitrate (as N)	%	91	70-130	Pass			
Nitrite (as N)	%	97	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	118	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	91	80-120	Pass			
Aluminium (filtered)	%	91	80-120	Pass			
Arsenic	%	98	80-120	Pass			
Arsenic (filtered)	%	98	80-120	Pass			
Cadmium (filtered)	%	100	70-130	Pass			
Chromium	%	100	80-120	Pass			
Chromium (filtered)	%	100	80-120	Pass			
Copper	%	97	80-120	Pass			
Copper (filtered)	%	97	80-120	Pass			
Iron	%	95	80-120	Pass			
Iron (filtered)	%	95	80-120	Pass			
Lead	%	98	80-120	Pass			
Lead (filtered)	%	98	80-120	Pass			
Manganese	%	100	80-120	Pass			
Manganese (filtered)	%	100	80-120	Pass			
Mercury	%	93	75-125	Pass			
Mercury (filtered)	%	93	70-130	Pass			
Nickel	%	99	80-120	Pass			
Nickel (filtered)	%	99	80-120	Pass			
Selenium	%	100	80-120	Pass			
Selenium (filtered)	%	100	80-120	Pass			
Zinc	%	97	80-120	Pass			
Zinc (filtered)	%	97	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	106	70-130	Pass			
Magnesium	%	114	70-130	Pass			
Potassium	%	101	70-130	Pass			
Sodium	%	104	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Nitrogens (speciated)				Result 1			
Ammonia (as N)	M16-My09200	NCP	%	93	70-130	Pass	
Nitrate (as N)	M16-My09200	NCP	%	88	70-130	Pass	
Nitrite (as N)	M16-My09200	NCP	%	97	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B16-My06181	NCP	%	105	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic (filtered)	B16-My08369	NCP	%	106	70-130	Pass	
Chromium (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Copper (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Lead (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Manganese (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Mercury (filtered)	M16-My08290	NCP	%	87	70-130	Pass	
Nickel (filtered)	B16-My08369	NCP	%	104	70-130	Pass	
Selenium (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Zinc (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	M16-My09395	CP	%	119		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-My09395	CP	%	122		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My09395	CP	%	92		70-130	Pass	
Sulphate (as S)	M16-My09395	CP	%	107		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-My09395	CP	%	109		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My12310	NCP	%	90		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My12310	NCP	%	95		70-130	Pass	
Toluene	M16-My12310	NCP	%	92		70-130	Pass	
Ethylbenzene	M16-My12310	NCP	%	81		70-130	Pass	
m&p-Xylenes	M16-My12310	NCP	%	76		70-130	Pass	
o-Xylene	M16-My12310	NCP	%	77		70-130	Pass	
Xylenes - Total	M16-My12310	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My12310	NCP	%	79		70-130	Pass	
TRH C6-C10	M16-My12310	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My09398	CP	%	96		70-130	Pass	
Magnesium	M16-My09398	CP	%	96		70-130	Pass	
Potassium	M16-My09398	CP	%	91		70-130	Pass	
Sodium	M16-My09398	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-My09400	CP	%	127		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-My09402	CP	%	86		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-My09405	CP	%	109		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-My09406	CP	%	98		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My09409	CP	%	95		70-130	Pass	
Magnesium	M16-My09409	CP	%	92		70-130	Pass	
Potassium	M16-My09409	CP	%	89		70-130	Pass	
Sodium	M16-My09409	CP	%	98		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Nitrate & Nitrite (as N)	M16-My10038	NCP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-My09394	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My09394	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-My09394	CP	mg/L	56	55	1.2	30%	Pass	
Sulphate (as S)	M16-My09394	CP	mg/L	10	10	1.3	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My08700	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate (as N)	M16-My09200	NCP	mg/L	0.08	0.08	9.0	30%	Pass	
Nitrite (as N)	M16-My08700	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-My08719	NCP	mg/L	0.38	0.41	7.0	30%	Pass	
Arsenic (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-My21483	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-My08369	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Iron	M16-My08719	NCP	mg/L	1.2	1.2	1.0	30%	Pass	
Lead (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	B16-My08369	NCP	mg/L	0.035	0.036	3.0	30%	Pass	
Mercury	M16-My03634	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	B16-My08369	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	B16-My08369	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-My09395	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-My09395	CP	mg/L	0.6	0.6	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-My06010	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-My06010	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-My06010	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-My06010	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M16-My06010	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My09398	CP	mg/L	5.6	6.5	15	30%	Pass
Magnesium	M16-My09398	CP	mg/L	4.7	4.8	1.0	30%	Pass
Potassium	M16-My09398	CP	mg/L	1.2	1.4	11	30%	Pass
Sodium	M16-My09398	CP	mg/L	27	29	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My09400	CP	mg/L	340	310	12	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	B16-My09442	NCP	mg/L	150	140	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My09406	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My09407	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-My09408	CP	NTU	1.9	2.0	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My09409	CP	mg/L	13	12	<1	30%	Pass
Magnesium	M16-My09409	CP	mg/L	7.5	7.5	<1	30%	Pass
Sodium	M16-My09409	CP	mg/L	40	40	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My09412	CP	uS/cm	440	430	1.0	30%	Pass
pH	M16-My09412	CP	pH Units	6.7	6.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	80	82	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	80	82	2.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M16-My10048	NCP	mg/L	1.5	1.5	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

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Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

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The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **499798-W-V2**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date May 10, 2016

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-My09394	M16-My09395	M16-My09396	M16-My09397
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	0.17	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	91	85	91	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	16	31	34	20
Chloride						
Chloride	1	mg/L	56	36	16	16
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	430	230	220	120
pH						
pH	0.1	pH Units	6.9	5.8	6.5	6.5
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.12	< 0.05	0.24	0.38
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Sulphate (as S)						
Sulphate (as S)	5	mg/L	10	10	6.4	< 5
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	290	140	^{Q19} 180	76
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	85	25	78	37
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	85	25	78	37

Client Sample ID			MW1	MW2	MW3	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09394	M16-My09395	M16-My09396	M16-My09397
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Nitrogens (Speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.26	0.14	0.61
Nitrate & Nitrite (as N)	0.05	mg/L	6.4	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	6.3	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.10	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.6	0.3	1.5	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	0.6	1.6	1.6
Total Nitrogen (as N)	0.2	mg/L	8.1	0.6	1.6	1.6
Heavy Metals						
Aluminium	0.05	mg/L	1.9	5.1	0.65	0.72
Aluminium (filtered)	0.05	mg/L	< 0.05	0.11	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.005	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.25	0.66	0.07	0.09
Iron (filtered)	0.05	mg/L	< 0.05	0.33	< 0.05	< 0.05
Lead	0.001	mg/L	0.003	0.008	< 0.001	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.028	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.027	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	0.007	0.026	< 0.005
Zinc (filtered)	0.001	mg/L	0.001	< 0.001	0.006	0.004
Alkali Metals						
Calcium	0.5	mg/L	29	8.2	33	14
Magnesium	0.5	mg/L	4.5	8.9	3.1	1.8
Potassium	0.5	mg/L	34	1.4	1.9	< 0.5
Sodium	0.5	mg/L	25	17	8.0	5.9

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-My09398	M16-My09399	M16-My09400	M16-My09401
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	73	55	68	65
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	55	190	77	100
Chloride	1	mg/L	42	86	89	82
Conductivity (at 25°C)	1	uS/cm	250	460	390	440
pH	0.1	pH Units	4.1	3.6	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.19	0.06	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	26	16	33
Total Dissolved Solids	10	mg/L	150	270	^{Q19} 340	290
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.17	0.07	0.16
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.8	0.4	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.0	0.5	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	1.0	0.5	0.4
Heavy Metals						
Aluminium	0.05	mg/L	3.9	65	21	23
Aluminium (filtered)	0.05	mg/L	1.5	11	7.5	4.2
Arsenic	0.001	mg/L	0.001	0.008	0.003	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001

Client Sample ID			MW17 Water	MW19 Water	MW20 Water	MW21 Water
Sample Matrix			M16-My09398	M16-My09399	M16-My09400	M16-My09401
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.096	0.014	0.015
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.016	0.004	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.7	1.7	2.5	24
Iron (filtered)	0.05	mg/L	0.93	0.06	1.2	22
Lead	0.001	mg/L	0.019	0.12	0.022	0.010
Lead (filtered)	0.001	mg/L	0.005	0.002	0.004	0.003
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0011	0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.029	0.011	0.008
Nickel (filtered)	0.001	mg/L	< 0.001	0.009	0.008	0.006
Selenium	0.001	mg/L	< 0.001	0.010	0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.014	0.006	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.007	0.004	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	5.6	0.6	< 0.5	5.6
Magnesium	0.5	mg/L	4.7	2.7	4.1	5.5
Potassium	0.5	mg/L	1.2	< 0.5	0.6	1.1
Sodium	0.5	mg/L	27	57	50	47

Client Sample ID			MW22 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	63	58	55	68

Client Sample ID			MW22	SWL1-1	SWL2-1	SWL2-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Acidity						
Acidity (as CaCO ₃)	10	mg/L	100	11	< 10	< 10
Chloride	1	mg/L	110	52	67	64
Conductivity (at 25°C)	1	uS/cm	510	280	320	320
pH	0.1	pH Units	4.0	6.8	6.8	6.8
Phosphate total (as P)	0.05	mg/L	< 0.05	0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	35	10	14	14
Total Dissolved Solids	10	mg/L	360	180	180	180
Turbidity	1	NTU	-	6.6	< 1	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	43	25	24
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	43	25	24
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.17	0.03	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.24	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.19	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.02	0.04	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.3	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.7	0.3	0.4
Heavy Metals						
Aluminium	0.05	mg/L	7.5	< 0.05	0.19	0.25
Aluminium (filtered)	0.05	mg/L	6.2	< 0.05	0.17	0.17
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	17	0.10	0.11	0.12
Iron (filtered)	0.05	mg/L	14	< 0.05	0.07	0.07
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			MW22 Water	SWL1-1 Water	SWL2-1 Water	SWL2-2 Water
Sample Matrix			M16-My09402	M16-My09403	M16-My09404	M16-My09405
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.016	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.015	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.025	0.005	0.006
Zinc (filtered)	0.001	mg/L	0.002	0.019	0.003	0.004
Alkali Metals						
Calcium	0.5	mg/L	14	13	5.2	5.2
Magnesium	0.5	mg/L	6.7	5.7	6.9	6.6
Potassium	0.5	mg/L	1.6	3.5	2.1	2.1
Sodium	0.5	mg/L	55	28	49	49
Pathogens						
E.coli	1	MPN/100mL	-	52	20	10
Thermotolerant Coliforms	1	MPN/100mL	-	98	20	72

Client Sample ID			SWL2-3 Water	SWL3-1 Water	SWL3-2 Water	SWL3-3 Water
Sample Matrix			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Eurofins mgt Sample No.			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	61	60	56	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			SWL2-3	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	70	63	62	63
Conductivity (at 25°C)	1	uS/cm	340	350	350	340
pH	0.1	pH Units	6.8	7.0	7.3	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	23	7.4	7.9	7.7
Total Dissolved Solids	10	mg/L	190	220	240	230
Turbidity	1	NTU	< 1	2.3	1.9	2.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	25	67	66	61
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	25	67	66	61
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.07	0.05	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.5	0.7	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.8	0.6
Total Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.8	0.6
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.35	0.35	0.36
Aluminium (filtered)	0.05	mg/L	0.15	0.28	0.25	0.31
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.10	0.25	0.26	0.25
Iron (filtered)	0.05	mg/L	0.06	0.18	0.18	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.045	< 0.005
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.003	0.002

Client Sample ID			SWL2-3	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09406	M16-My09407	M16-My09408	M16-My09409
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	5.2	12	12	13
Magnesium	0.5	mg/L	6.8	7.0	7.0	7.5
Potassium	0.5	mg/L	2.1	2.1	1.9	2.0
Sodium	0.5	mg/L	61	48	48	40
Pathogens						
E.coli	1	MPN/100mL	10	74	84	74
Thermotolerant Coliforms	1	MPN/100mL	120	190	300	210

Client Sample ID			QC116	QC117	QC118	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09410	M16-My09411	M16-My09412	M16-My09413
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	0.04
TRH C10-C14	0.05	mg/L	-	-	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	-	-	< 0.1	0.2
TRH C29-C36	0.1	mg/L	-	-	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	0.2
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	0.012
Toluene	0.001	mg/L	-	-	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	-	-	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	< 0.002
o-Xylene	0.001	mg/L	-	-	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	-	-	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	-	64	108
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	-	-	< 0.02	0.04
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	0.03
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	0.2
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	< 0.1
Other Parameters						
Acidity (as CaCO3)	10	mg/L	-	-	17	81
Chloride	1	mg/L	-	-	56	90
Conductivity (at 25°C)	1	uS/cm	-	-	440	790
pH	0.1	pH Units	-	-	6.7	6.5
Phosphate total (as P)	0.05	mg/L	-	-	0.17	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	-	11	52
Total Dissolved Solids	10	mg/L	-	-	300	540

Client Sample ID			QC116	QC117	QC118	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-My09410	M16-My09411	M16-My09412	M16-My09413
Date Sampled			May 09, 2016	May 09, 2016	May 09, 2016	May 09, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	80	110
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	80	110
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	-	0.07	1.2
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	6.5	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	6.4	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	0.10	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	0.5	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.6	2.1
Total Nitrogen (as N)	0.2	mg/L	-	-	7.1	2.1
Heavy Metals						
Aluminium	0.05	mg/L	-	-	7.5	1.1
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.22
Arsenic	0.001	mg/L	-	-	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.011	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	0.004	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	1.1	1.1
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.05	0.54
Lead	0.001	mg/L	-	-	0.010	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	-	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.003	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	-	-	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	0.016	0.006
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	-	-	30	53
Magnesium	0.5	mg/L	-	-	4.7	7.6
Potassium	0.5	mg/L	-	-	33	14
Sodium	0.5	mg/L	-	-	24	79

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	May 13, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 11, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 11, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	May 13, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	May 12, 2016	14 Day
Chloride - Method: MGT 1100A	Melbourne	May 11, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	May 12, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	May 12, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	May 11, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	May 11, 2016	2 Day
Sulphate (as S) - Method: In house MGT1110A (SO ₄ by Discrete Analyser)	Melbourne	May 11, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	May 11, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	May 10, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	May 12, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	May 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	May 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	May 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	May 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	May 11, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	May 11, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	May 11, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	May 10, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	May 10, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	May 24, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 24, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	128			70-130	Pass	
TRH C10-C14	%	70			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	118			70-130	Pass	
Toluene	%	121			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	111			70-130	Pass	
Xylenes - Total	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	89			70-130	Pass	
TRH C6-C10	%	122			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	70			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	103			70-130	Pass	
Chloride	%	111			70-130	Pass	
Phosphate total (as P)	%	96			70-130	Pass	
Sulphate (as S)	%	113			70-130	Pass	
Total Dissolved Solids	%	95			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	122			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	98			70-130	Pass	
Nitrate & Nitrite (as N)	%	91			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Nitrate (as N)	%	91	70-130	Pass			
Nitrite (as N)	%	97	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	118	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	91	80-120	Pass			
Aluminium (filtered)	%	91	80-120	Pass			
Arsenic	%	98	80-120	Pass			
Arsenic (filtered)	%	98	80-120	Pass			
Cadmium (filtered)	%	100	70-130	Pass			
Chromium	%	100	80-120	Pass			
Chromium (filtered)	%	100	80-120	Pass			
Copper	%	97	80-120	Pass			
Copper (filtered)	%	97	80-120	Pass			
Iron	%	95	80-120	Pass			
Iron (filtered)	%	95	80-120	Pass			
Lead	%	98	80-120	Pass			
Lead (filtered)	%	98	80-120	Pass			
Manganese	%	100	80-120	Pass			
Manganese (filtered)	%	100	80-120	Pass			
Mercury	%	93	75-125	Pass			
Mercury (filtered)	%	93	70-130	Pass			
Nickel	%	99	80-120	Pass			
Nickel (filtered)	%	99	80-120	Pass			
Selenium	%	100	80-120	Pass			
Selenium (filtered)	%	100	80-120	Pass			
Zinc	%	97	80-120	Pass			
Zinc (filtered)	%	97	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	106	70-130	Pass			
Magnesium	%	114	70-130	Pass			
Potassium	%	101	70-130	Pass			
Sodium	%	104	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Nitrogens (speciated)				Result 1			
Ammonia (as N)	M16-My09200	NCP	%	93	70-130	Pass	
Nitrate (as N)	M16-My09200	NCP	%	88	70-130	Pass	
Nitrite (as N)	M16-My09200	NCP	%	97	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B16-My06181	NCP	%	105	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic (filtered)	B16-My08369	NCP	%	106	70-130	Pass	
Chromium (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Copper (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Lead (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Manganese (filtered)	B16-My08369	NCP	%	105	70-130	Pass	
Mercury (filtered)	M16-My08290	NCP	%	87	70-130	Pass	
Nickel (filtered)	B16-My08369	NCP	%	104	70-130	Pass	
Selenium (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Zinc (filtered)	B16-My08369	NCP	%	108	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	M16-My09395	CP	%	119		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-My09395	CP	%	122		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-My09395	CP	%	92		70-130	Pass	
Sulphate (as S)	M16-My09395	CP	%	107		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-My09395	CP	%	109		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-My12310	NCP	%	90		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-My12310	NCP	%	95		70-130	Pass	
Toluene	M16-My12310	NCP	%	92		70-130	Pass	
Ethylbenzene	M16-My12310	NCP	%	81		70-130	Pass	
m&p-Xylenes	M16-My12310	NCP	%	76		70-130	Pass	
o-Xylene	M16-My12310	NCP	%	77		70-130	Pass	
Xylenes - Total	M16-My12310	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-My12310	NCP	%	79		70-130	Pass	
TRH C6-C10	M16-My12310	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My09398	CP	%	96		70-130	Pass	
Magnesium	M16-My09398	CP	%	96		70-130	Pass	
Potassium	M16-My09398	CP	%	91		70-130	Pass	
Sodium	M16-My09398	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-My09400	CP	%	127		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-My09402	CP	%	86		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-My09405	CP	%	109		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-My09406	CP	%	98		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-My09409	CP	%	95		70-130	Pass	
Magnesium	M16-My09409	CP	%	92		70-130	Pass	
Potassium	M16-My09409	CP	%	89		70-130	Pass	
Sodium	M16-My09409	CP	%	98		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Nitrate & Nitrite (as N)	M16-My10038	NCP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M16-My09394	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My09394	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My09394	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-My09394	CP	mg/L	56	55	1.2	30%	Pass	
Sulphate (as S)	M16-My09394	CP	mg/L	10	10	1.3	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-My08700	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate (as N)	M16-My09200	NCP	mg/L	0.08	0.08	9.0	30%	Pass	
Nitrite (as N)	M16-My08700	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-My08719	NCP	mg/L	0.38	0.41	7.0	30%	Pass	
Arsenic (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-My21483	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-My08369	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Iron	M16-My08719	NCP	mg/L	1.2	1.2	1.0	30%	Pass	
Lead (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	B16-My08369	NCP	mg/L	0.035	0.036	3.0	30%	Pass	
Mercury	M16-My03634	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	B16-My08369	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-My08369	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	B16-My08369	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-My09395	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-My09395	CP	mg/L	0.6	0.6	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-My06010	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-My06010	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-My06010	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-My06010	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-My06010	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M16-My06010	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My09398	CP	mg/L	5.6	6.5	15	30%	Pass
Magnesium	M16-My09398	CP	mg/L	4.7	4.8	1.0	30%	Pass
Potassium	M16-My09398	CP	mg/L	1.2	1.4	11	30%	Pass
Sodium	M16-My09398	CP	mg/L	27	29	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-My09400	CP	mg/L	340	310	12	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	B16-My09442	NCP	mg/L	150	140	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-My09406	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-My09407	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-My09408	CP	NTU	1.9	2.0	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-My09409	CP	mg/L	13	12	<1	30%	Pass
Magnesium	M16-My09409	CP	mg/L	7.5	7.5	<1	30%	Pass
Sodium	M16-My09409	CP	mg/L	40	40	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-My09412	CP	uS/cm	440	430	1.0	30%	Pass
pH	M16-My09412	CP	pH Units	6.7	6.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	80	82	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-My09412	CP	mg/L	80	82	2.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Nitrate & Nitrite (as N)	M16-My10048	NCP	mg/L	1.5	1.5	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CERTIFICATE OF ANALYSIS

Work Order : **EP1604031**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 6
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 05-May-2016 16:45
Date Analysis Commenced : 05-May-2016
Issue Date : 12-May-2016 16:11

NATA Accredited Laboratory 825
 Accredited for compliance with
 ISO/IEC 17025.



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

- EK061G/EK067G (TKN/TP): LOR for sample 'QC112' raised due to possible sample matrix interference.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006: estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC107	QC108	QC109	QC110	QC112
Client sampling date / time				[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]	
Compound	CAS Number	LOR	Unit	EP1604031-001	EP1604031-002	EP1604031-003	EP1604031-004	EP1604031-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.78	7.42	7.91	7.53	4.14	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	647	2490	2440	1630	338	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	482	1630	1740	1180	274	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	38	203	186	177	<1	
Total Alkalinity as CaCO3	----	1	mg/L	38	203	186	177	<1	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	99	4	40	26	12	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	126	689	672	422	78	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	32	90	68	53	2	
Magnesium	7439-95-4	1	mg/L	14	54	47	33	7	
Sodium	7440-23-5	1	mg/L	67	322	351	217	42	
Potassium	7440-09-7	1	mg/L	26	8	6	5	2	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.27	<0.01	<0.01	0.03	0.53	
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	0.001	<0.001	
Cadmium	7440-43-9	0.00005	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.014	0.008	0.082	0.006	0.001	
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.018	<0.005	<0.005	<0.005	<0.005	
Iron	7439-89-6	0.05	mg/L	0.89	0.12	<0.05	0.16	0.26	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.27	9.86	13.4	14.9	0.57	
Arsenic	7440-38-2	0.001	mg/L	0.002	0.006	0.009	0.028	<0.001	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC107	QC108	QC109	QC110	QC112
Client sampling date / time				[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]	
Compound	CAS Number	LOR	Unit	EP1604031-001	EP1604031-002	EP1604031-003	EP1604031-004	EP1604031-005	
				Result	Result	Result	Result	Result	
EG020T: Total Metals by ICP-MS - Continued									
Cadmium	7440-43-9	0.00005	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	0.020	0.029	0.026	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.019	0.004	0.006	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.018	0.017	0.020	<0.001	
Manganese	7439-96-5	0.001	mg/L	0.013	0.024	0.110	0.012	0.002	
Nickel	7440-02-0	0.001	mg/L	0.002	0.016	0.017	0.032	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	0.01	0.01	0.02	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.011	0.039	0.020	0.012	<0.005	
Iron	7439-89-6	0.05	mg/L	0.85	13.9	8.35	34.6	0.29	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0001	0.0001	<0.0001	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.55	0.20	0.25	0.02	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.14	0.02	0.26	0.01	0.02	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.14	0.02	0.26	0.01	0.02	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.5	2.0	0.8	1.4	2.3	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.6	2.0	1.1	1.4	2.3	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.92	0.20	0.22	0.19	<0.10	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.91	0.07	0.09	0.11	0.05	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20	
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	µg/L	<100	140	<100	<100	<100	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC107	QC108	QC109	QC110	QC112
Client sampling date / time					[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]	[05-May-2016]
Compound	CAS Number	LOR	Unit	EP1604031-001	EP1604031-002	EP1604031-003	EP1604031-004	EP1604031-005	
				Result	Result	Result	Result	Result	
EP080/071: Total Petroleum Hydrocarbons - Continued									
C29 - C36 Fraction	----	50	µg/L	<50	140	<50	<50	<50	
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	280	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20	
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
>C16 - C34 Fraction	----	100	µg/L	<100	240	<100	<100	<100	
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	240	<100	<100	<100	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100	
EP080: BTEXN									
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2	
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2	
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	260	----	----	----	~<1	
Escherichia coli	----	1	CFU/100mL	260	----	----	----	~<1	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	104	106	109	109	109	
Toluene-D8	2037-26-5	2	%	100	100	99.8	99.1	101	
4-Bromofluorobenzene	460-00-4	2	%	92.9	93.7	95.3	93.0	93.1	



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

QUALITY CONTROL REPORT

Work Order	: EP1604031	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 05-May-2016
Order number	: ----	Date Analysis Commenced	: 05-May-2016
C-O-C number	: ----	Issue Date	: 12-May-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Supervisor	Perth Inorganics, Malaga, WA
Rassem Ayoubi	Senior Organic Chemist	Perth Organics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 445384)									
EP1604033-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.70	7.75	0.647	0% - 20%
EP1604033-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.00	7.99	0.125	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 445382)									
EP1604025-009	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	11600	11600	0.507	0% - 20%
EP1604030-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	481	475	1.26	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 444862)									
EP1604008-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	287	272	5.55	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 445383)									
EP1604037-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	390	401	2.84	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	390	401	2.84	0% - 20%
EP1604030-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	137	142	3.97	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	137	142	3.97	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 444169)									
EP1604031-001	QC107	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	99	98	1.43	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 444168)									
EP1604031-001	QC107	ED045G: Chloride	16887-00-6	1	mg/L	126	128	1.27	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 448332)									
EP1604033-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	80	77	2.86	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	75	76	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	349	350	0.00	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
ED093F: Dissolved Major Cations (QC Lot: 448332) - continued										
EP1604033-006	Anonymous	ED093F: Potassium	7440-09-7	1	mg/L	13	14	0.00	0% - 50%	
EP1604031-001	QC107	ED093F: Calcium	7440-70-2	1	mg/L	32	31	4.46	0% - 20%	
		ED093F: Magnesium	7439-95-4	1	mg/L	14	14	0.00	0% - 50%	
		ED093F: Sodium	7440-23-5	1	mg/L	67	65	2.44	0% - 20%	
		ED093F: Potassium	7440-09-7	1	mg/L	26	26	0.00	0% - 20%	
EG020F: Dissolved Metals by ICP-MS (QC Lot: 448331)										
EP1604011-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0121	0.0106	13.2	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.020	<0.020	0.00	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.020	<0.020	0.00	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.187	0.182	2.61	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.020	<0.020	0.00	No Limit	
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.052	0.060	15.6	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.302	0.301	0.398	0% - 50%	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.100	<0.100	0.00	No Limit	
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.20	<0.20	0.00	No Limit	
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	0.24	0.29	19.9	No Limit	
EP1604031-003	QC109	EG020A-F: Iron	7439-89-6	0.05	mg/L	0.24	0.23	0.00	No Limit	
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.082	0.083	0.00	0% - 20%	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit	
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit	
EG020T: Total Metals by ICP-MS (QC Lot: 448305)	EP1604031-002	QC108	EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
			EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
			EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
			EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.00	No Limit
			EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.020	0.019	5.19	0% - 50%
			EG020A-T: Copper	7440-50-8	0.001	mg/L	0.019	0.019	0.00	0% - 50%
			EG020A-T: Lead	7439-92-1	0.001	mg/L	0.018	0.017	0.00	0% - 50%
			EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.024	0.025	0.00	0% - 20%
			EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.016	0.016	0.00	0% - 50%
			EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.039	0.039	0.00	No Limit
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	9.86	9.37	5.16	0% - 20%			
EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.01	0.01	0.00	No Limit			
EG020A-T: Iron	7439-89-6	0.05	mg/L	13.9	13.5	2.38	0% - 20%			



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 448305) - continued									
EP1603924-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.20	0.22	8.46	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	1.01	1.02	1.29	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 448333)									
EP1604037-006	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1604031-001	QC107	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 448315)									
EP1604031-003	QC109	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
EP1604037-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 444175)									
EP1604008-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.04	54.6	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 444167)									
EP1604031-001	QC107	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 444176)									
EP1604008-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	8.31	8.38	0.823	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 444712)									
EP1604031-001	QC107	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.5	2.5	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 444713)									
EP1604031-001	QC107	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.92	0.92	0.00	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 444170)									
EP1604031-001	QC107	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.91	0.92	1.75	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 445881)									
EP1604031-001	QC107	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP1604040-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 446588)									
EP1604037-003	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 445881)									
EP1604031-001	QC107	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

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 Work Order : EP1604031
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 445881) - continued									
EP1604040-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 446588)									
EP1604037-003	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 445881)									
EP1604031-001	QC107	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP1604040-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 445384)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 445382)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.0	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 444862)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	93.4	83	111	
				<10	293 mg/L	93.8	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 445383)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	103	76	126	
				<1	200 mg/L	92.3	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 444169)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	89	113	
				<1	100 mg/L	96.3	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 444168)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	93.6	84	120	
				<1	1000 mg/L	99.9	84	110	
ED093F: Dissolved Major Cations (QCLot: 448332)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.1	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	96.5	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.1	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.2	90	110	
EG020F: Dissolved Metals by ICP-MS (QCLot: 448331)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	93.6	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	84	108	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.8	86	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.5	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.2	84	110	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.7	85	107	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	97.7	85	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.1	84	112	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 448331) - continued								
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	107	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.1	89	115
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.8	84	112
EG020T: Total Metals by ICP-MS (QCLot: 448305)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	97.8	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	83	107
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	93.1	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.5	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.3	85	111
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.2	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.9	83	109
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.3	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	103	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.4	81	103
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.2	82	112
EG035F: Dissolved Mercury by FIMS (QCLot: 448333)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	92	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 448315)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	87	115
EK055G: Ammonia as N by Discrete Analyser (QCLot: 444175)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 444167)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 444176)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 444712)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	93.4	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 444713)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	80.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 444170)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	87	115
EP080/071: Total Petroleum Hydrocarbons (QCLot: 445881)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	89.4	74	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 446588)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	66.6	35	95
EP071: C15 - C28 Fraction	----	100	µg/L	<100	400 µg/L	64.8	34	111
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	59.3	34	105



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 445881)									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	370 µg/L	87.1	74	115	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 446588)									
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	400 µg/L	66.9	37	99	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	600 µg/L	61.8	35	108	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	200 µg/L	57.7	11	117	
EP080: BTEXN (QCLot: 445881)									
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	100	84	114	
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	91.3	81	115	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	93.1	84	113	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	94.0	84	114	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	96.5	87	111	
EP080: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	96.2	77	118	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 444169)								
EP1604031-001	QC107	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	112	70	130	
ED045G: Chloride by Discrete Analyser (QCLot: 444168)								
EP1604008-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	102	70	130	
EG020F: Dissolved Metals by ICP-MS (QCLot: 448331)								
EP1604031-004	QC110	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	115	70	130	
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	112	70	130	
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	105	70	130	
		EG020A-F: Copper	7440-50-8	0.2 mg/L	110	70	130	
		EG020A-F: Lead	7439-92-1	0.2 mg/L	106	70	130	
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	109	70	130	
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	112	70	130	
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	120	70	130	
EG020T: Total Metals by ICP-MS (QCLot: 448305)								
EP1604031-001	QC107	EG020A-T: Arsenic	7440-38-2	1 mg/L	103	70	130	
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	99.5	70	130	



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 448305) - continued							
EP1604031-001	QC107	EG020A-T: Chromium	7440-47-3	1 mg/L	95.7	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	93.1	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	92.1	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	98.6	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.9	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 448333)							
EP1604031-002	QC108	EG035F: Mercury	7439-97-6	0.01 mg/L	90.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 448315)							
EP1604031-004	QC110	EG035T: Mercury	7439-97-6	0.01 mg/L	91.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 444175)							
EP1604008-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	102	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 444167)							
EP1604008-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	113	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 444176)							
EP1604008-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 444712)							
EP1604031-001	QC107	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	91.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 444713)							
EP1604031-001	QC107	EK067G: Total Phosphorus as P	----	1 mg/L	79.3	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 444170)							
EP1604031-001	QC107	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	95.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 445881)							
EP1604025-002	Anonymous	EP080: C6 - C9 Fraction	----	240 µg/L	82.0	77	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 445881)							
EP1604025-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	290 µg/L	79.2	77	137
EP080: BTEXN (QCLot: 445881)							
EP1604025-002	Anonymous	EP080: Benzene	71-43-2	20 µg/L	92.4	77	122
		EP080: Toluene	108-88-3	20 µg/L	86.4	74	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1604031	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 05-May-2016
Site	: ----	Issue Date	: 12-May-2016
Sampler	: HARRIET CARTER	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1604008--002	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
QC107, QC109, QC112	QC108, QC110,	----	----	----	06-May-2016	05-May-2016	1

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
QC107, QC109, QC112	05-May-2016	QC108, QC110,	----	----	----	06-May-2016	05-May-2016	*



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	06-May-2016	02-Jun-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	06-May-2016	12-May-2016	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	06-May-2016	19-May-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	02-Jun-2016	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	02-Jun-2016	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	11-May-2016	02-Jun-2016	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	11-May-2016	01-Nov-2016	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC107, QC109, QC112	QC108, QC110	05-May-2016	11-May-2016	01-Nov-2016	✓	11-May-2016	01-Nov-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	11-May-2016	02-Jun-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	11-May-2016	02-Jun-2016	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	02-Jun-2016	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	07-May-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	02-Jun-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC107, QC109, QC112	QC108, QC110	05-May-2016	10-May-2016	02-Jun-2016	✓	11-May-2016	02-Jun-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC107, QC109, QC112	QC108, QC110	05-May-2016	10-May-2016	02-Jun-2016	✓	11-May-2016	02-Jun-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC107, QC109, QC112	QC108, QC110	05-May-2016	----	----	----	05-May-2016	07-May-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) QC107, QC109, QC112	QC108, QC110,	05-May-2016	09-May-2016	12-May-2016	✓	11-May-2016	18-Jun-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) QC107, QC109, QC112	QC108, QC110,	05-May-2016	08-May-2016	19-May-2016	✓	08-May-2016	19-May-2016	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC107,	QC112	05-May-2016	----	----	----	05-May-2016	06-May-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	EP071	1	15	6.67	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	13	15.38	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	8	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO ₄ 2- by Discrete Analyser	ED041G	2	5	40.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	8	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatle Fraction	EP071	0	15	0.00	5.00	*	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatle Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 22, 2016 8:19 AM**
Eurofins | mgt reference: **505240**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QC119 AND QC120 NOT RECEIVED. MICRO BOTTLE NOT RECEIVED FOR QC121 TESTING CAN'T BE PERFORMED

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **505240-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jun 22, 2016

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Jn19834	M16-Jn19835	M16-Jn19836	M16-Jn19837
Date Sampled			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	26	72	37	43
Chloride	1	mg/L	360	3900	6000	920
Conductivity (at 25°C)	1	uS/cm	1400	12000	15000	3100
pH	0.1	pH Units	7.1	6.1	6.1	5.8
Phosphate total (as P)	0.05	mg/L	0.93	0.25	0.84	0.15
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.22	< 0.05
Sulphate (as S)	5	mg/L	13	130	190	43
Total Dissolved Solids	10	mg/L	920	7900	^{Q19} 12000	1800
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	30	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	30	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.78	0.83	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	0.08	0.58	44	< 0.05
Nitrate (as N)	0.02	mg/L	0.08	0.54	44	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	0.04	0.06	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.5	3.0	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	2.3	3.8	1.0
Total Nitrogen (as N)	0.2	mg/L	< 0.2	2.9	48	1.0
Heavy Metals						
Aluminium	0.05	mg/L	5.0	2.8	3.6	0.57
Aluminium (filtered)	0.05	mg/L	< 0.05	0.09	1.0	< 0.05
Arsenic	0.001	mg/L	0.018	0.011	0.004	0.014
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00092	0.0018	< 0.0002
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00045	0.0017	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.002	0.023	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.018	< 0.001
Iron	0.05	mg/L	110	8.6	2.4	46
Iron (filtered)	0.05	mg/L	< 0.05	3.5	0.49	0.60
Lead	0.001	mg/L	0.025	0.011	0.004	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-Jn19834	M16-Jn19835	M16-Jn19836	M16-Jn19837
Eurofins mgt Sample No.			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.084	0.15	0.26	0.007
Manganese (filtered)	0.005	mg/L	0.049	0.13	0.24	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.037	0.017	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.030	0.014	< 0.001
Selenium	0.001	mg/L	0.002	0.001	0.004	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Zinc	0.005	mg/L	0.017	8.9	1.6	0.011
Zinc (filtered)	0.001	mg/L	< 0.001	7.4	1.5	0.008
Alkali Metals						
Calcium	0.5	mg/L	68	89	80	14
Magnesium	0.5	mg/L	27	300	390	70
Potassium	0.5	mg/L	7.1	25	67	11
Sodium	0.5	mg/L	150	1900	3000	500

Client Sample ID			MW50 Water	SWL21-1 Water	SWL21-2 Water	SWL21-3 Water
Sample Matrix			M16-Jn19838	M16-Jn19839	M16-Jn19840	M16-Jn19841
Eurofins mgt Sample No.			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	87	50	12	10
Chloride	1	mg/L	2600	2100	760	710
Conductivity (at 25°C)	1	uS/cm	8000	6400	2400	2200
pH	0.1	pH Units	6.4	3.8	7.1	7.3
Phosphate total (as P)	0.05	mg/L	0.29	0.22	0.34	0.37
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.12	0.14
Sulphate (as S)	5	mg/L	59	64	18	17
Total Dissolved Solids	10	mg/L	5500	4200	^{Q19} 1700	^{Q19} 1600
Turbidity	1	NTU	-	120	11	9.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	52	< 20	65	64
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	52	< 20	65	64
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.39	0.04	0.05	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.06	0.07	0.09
Nitrate (as N)	0.02	mg/L	0.06	0.06	0.04	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.9	1.2	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.9	1.3	1.4
Total Nitrogen (as N)	0.2	mg/L	0.6	1.0	1.4	1.5

Client Sample ID			MW50 Water	SWL21-1 Water	SWL21-2 Water	SWL21-3 Water
Sample Matrix			M16-Jn19838	M16-Jn19839	M16-Jn19840	M16-Jn19841
Eurofins mgt Sample No.			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	3.5	4.9	0.92	0.17
Aluminium (filtered)	0.05	mg/L	0.05	4.0	0.14	0.07
Arsenic	0.001	mg/L	0.003	< 0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00007	0.00020	< 0.0002	< 0.0002
Cadmium (filtered)	0.00005	mg/L	0.00007	0.00017	< 0.0001	< 0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.003	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	7.4	5.4	2.5	2.0
Iron (filtered)	0.05	mg/L	7.4	1.8	1.3	1.1
Lead	0.001	mg/L	0.029	0.002	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.021	0.15	0.049	0.037
Manganese (filtered)	0.005	mg/L	0.019	0.14	0.045	0.032
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.027	0.003	0.002
Nickel (filtered)	0.001	mg/L	0.002	0.026	0.003	0.002
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	0.043	0.012	0.011
Zinc (filtered)	0.001	mg/L	0.008	0.043	0.008	0.010
Alkali Metals						
Calcium	0.5	mg/L	29	28	28	29
Magnesium	0.5	mg/L	180	180	59	57
Potassium	0.5	mg/L	35	20	10.0	11
Sodium	0.5	mg/L	1400	970	340	330
Pathogens						
E.coli	1	MPN/100mL	-	190	790	750
Thermotolerant Coliforms	1	MPN/100mL	-	2300	2500	1600

Client Sample ID			SWL20-1 Water	SWL20-2 Water	SWL20-3 Water	QC121 Water
Sample Matrix			M16-Jn19842	M16-Jn19843	M16-Jn19844	M16-Jn19845
Eurofins mgt Sample No.			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	15	13	15	54
Chloride	1	mg/L	1000	1100	1100	2700
Conductivity (at 25°C)	1	uS/cm	3200	3500	3300	8200
pH	0.1	pH Units	6.6	6.6	6.6	6.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.39	1.6
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	33	34	33	59
Total Dissolved Solids	10	mg/L	2100	2100	2200	5300
Turbidity	1	NTU	7.8	6.4	4.5	4200

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	QC121
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn19842	M16-Jn19843	M16-Jn19844	M16-Jn19845
Date Sampled			Jun 21, 2016	Jun 21, 2016	Jun 21, 2016	Jun 21, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	27
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	27
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.02	< 0.01	0.26
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.12
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.11
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	0.8	0.3	3.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	0.8	0.3	4.0
Total Nitrogen (as N)	0.2	mg/L	0.9	0.8	0.3	4.1
Heavy Metals						
Aluminium	0.05	mg/L	0.08	0.15	< 0.05	23
Aluminium (filtered)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.010
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0002	< 0.0002	0.00006	0.00009
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.00005	0.00009
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.025
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	1.6	1.6	8.9
Iron (filtered)	0.05	mg/L	0.76	0.71	0.80	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.17
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.017	0.015	0.015	0.022
Manganese (filtered)	0.005	mg/L	0.015	0.013	0.014	0.020
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0010
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	0.006
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.009
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.006	0.005	0.038
Zinc (filtered)	0.001	mg/L	0.003	0.005	0.002	0.018
Alkali Metals						
Calcium	0.5	mg/L	10	11	10	29
Magnesium	0.5	mg/L	61	64	64	190
Potassium	0.5	mg/L	13	12	11	36
Sodium	0.5	mg/L	560	590	580	1400
Pathogens						
E.coli	1	MPN/100mL	210	170	360	-
Thermotolerant Coliforms	1	MPN/100mL	600	470	460	-

Client Sample ID			QC119	QC120
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Jn21094	M16-Jn21095
Date Sampled			Jun 21, 2016	Jun 21, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 24, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 22, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 22, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 22, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 22, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jun 22, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 22, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 22, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jun 23, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 22, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jun 22, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 22, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jun 22, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jun 22, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 22, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 22, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 24, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 23, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 22, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jun 22, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jun 22, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 505240 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Jun 22, 2016 8:19 AM Due: Jun 30, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)					
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Sydney Laboratory - NATA Site # 18217											X	X																																			
Brisbane Laboratory - NATA Site # 20794																																															
External Laboratory																																															
11	SWL20-3	Jun 21, 2016		Water	M16-Jn19844	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	QC121	Jun 21, 2016		Water	M16-Jn19845	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	QC119	Jun 21, 2016		Water	M16-Jn21094			X	X	X			X	X			X			X	X	X	X	X	X	X	X				X								X								
14	QC120	Jun 21, 2016		Water	M16-Jn21095			X	X	X			X	X			X			X	X	X	X	X	X	X	X				X									X							
Test Counts						12	12	14	12	14	12	14	12	14	12	12	14	6	12	14	12	14	12	14	12	14	12	14	12	12	12	12	12	14	12	6	12	7	12	14	12	12	12	12			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.00005	Fail	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	121			70-130	Pass	
Chloride	%	102			70-130	Pass	
Phosphate total (as P)	%	115			70-130	Pass	
Sulphate (as S)	%	100			70-130	Pass	
Total Dissolved Solids	%	108			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	111			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	%	93			70-130	Pass	
Nitrate (as N)	%	93			70-130	Pass	
Nitrite (as N)	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	88			70-130	Pass	
Total Nitrogen (as N)	%	80			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	109			80-120	Pass	
Aluminium (filtered)	%	86			80-120	Pass	
Arsenic	%	99			80-120	Pass	
Arsenic (filtered)	%	85			80-120	Pass	
Cadmium	%	93			70-130	Pass	
Cadmium (filtered)	%	89			70-130	Pass	
Chromium (filtered)	%	92			80-120	Pass	
Copper	%	97			80-120	Pass	
Copper (filtered)	%	95			80-120	Pass	
Iron	%	106			80-120	Pass	
Iron (filtered)	%	89			80-120	Pass	
Lead	%	98			80-120	Pass	
Lead (filtered)	%	93			80-120	Pass	
Manganese	%	98			80-120	Pass	
Manganese (filtered)	%	92			80-120	Pass	
Mercury	%	87			75-125	Pass	
Mercury (filtered)	%	95			70-130	Pass	
Nickel	%	98			80-120	Pass	
Nickel (filtered)	%	87			80-120	Pass	
Selenium	%	97			80-120	Pass	
Selenium (filtered)	%	97			80-120	Pass	
Zinc	%	96			80-120	Pass	
Zinc (filtered)	%	88			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	97			70-130	Pass	
Magnesium	%	106			70-130	Pass	
Potassium	%	94			70-130	Pass	
Sodium	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Jn17530	NCP	%	106		70-130	Pass	
Sulphate (as S)	M16-Jn18700	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Jn19092	NCP	%	116		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Jn18700	NCP	%	104		75-125	Pass	
Arsenic (filtered)	M16-Jn20518	NCP	%	102		70-130	Pass	
Cadmium	M16-Jn24960	NCP	%	99		70-130	Pass	
Chromium (filtered)	M16-Jn20518	NCP	%	94		70-130	Pass	
Copper	M16-Jn18700	NCP	%	95		75-125	Pass	
Copper (filtered)	M16-Jn20518	NCP	%	88		70-130	Pass	
Lead	M16-Jn18700	NCP	%	95		75-125	Pass	
Lead (filtered)	M16-Jn20518	NCP	%	89		70-130	Pass	
Manganese	M16-Jn18700	NCP	%	98		75-125	Pass	
Manganese (filtered)	M16-Jn20518	NCP	%	84		70-130	Pass	
Mercury	M16-Jn18700	NCP	%	78		70-130	Pass	
Mercury (filtered)	M16-Jn20518	NCP	%	77		70-130	Pass	
Nickel	M16-Jn18700	NCP	%	95		75-125	Pass	
Nickel (filtered)	M16-Jn20518	NCP	%	90		70-130	Pass	
Selenium	M16-Jn18700	NCP	%	103		75-125	Pass	
Selenium (filtered)	M16-Jn20518	NCP	%	100		70-130	Pass	
Zinc	M16-Jn18700	NCP	%	95		75-125	Pass	
Zinc (filtered)	M16-Jn20518	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn19835	CP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Cadmium (filtered)	M16-Jn19835	CP	%	90		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	B16-Jn22259	NCP	%	92		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Jn19838	CP	%	108		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Jn19839	CP	%	78		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Jn19840	CP	%	87		70-130	Pass	
Magnesium	M16-Jn19840	CP	%	90		70-130	Pass	
Potassium	M16-Jn19840	CP	%	83		70-130	Pass	
Sodium	M16-Jn19840	CP	%	97		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Jn19842	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn19842	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-Jn19842	CP	%	90		70-130	Pass	
Nitrite (as N)	M16-Jn19842	CP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn19845	CP	%	114			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M16-Jn24290	NCP	%	94			75-125	Pass	
Cadmium (filtered)	M16-Jn19845	CP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron (filtered)	M16-Jn20518	NCP	%	96			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Jn19834	CP	mg/L	360	360	1.7	30%	Pass	
Sulphate (as S)	M16-Jn19834	CP	mg/L	13	13	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Jn21259	NCP	mg/L	0.30	0.28	5.0	30%	Pass	
Arsenic	M16-Jn18700	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Arsenic (filtered)	M16-Jn20518	NCP	mg/L	0.002	0.001	17	30%	Pass	
Cadmium	M16-Jn24959	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	M16-Jn19834	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Jn20518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Jn18700	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Jn20518	NCP	mg/L	0.009	0.007	16	30%	Pass	
Iron	M16-Jn23294	NCP	mg/L	6.3	6.0	4.0	30%	Pass	
Iron (filtered)	M16-Jn17568	NCP	mg/L	15	15	<1	30%	Pass	
Lead	M16-Jn18700	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Jn20518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Jn18700	NCP	mg/L	0.032	0.034	7.0	30%	Pass	
Manganese (filtered)	M16-Jn20518	NCP	mg/L	0.096	0.083	15	30%	Pass	
Mercury	M16-Jn18700	NCP	mg/L	0.0001	0.0001	7.0	30%	Pass	
Mercury (filtered)	M16-Jn20518	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Jn18700	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Jn20518	NCP	mg/L	0.001	0.001	2.0	30%	Pass	
Selenium	M16-Jn21087	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Jn20518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Jn18700	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M16-Jn20518	NCP	mg/L	0.027	0.023	15	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Jn19835	CP	mg/L	3900	3800	2.3	30%	Pass	
Phosphorus reactive (as P)	M16-Jn19835	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Jn19835	CP	mg/L	130	130	1.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Jn19837	CP	mg/L	0.15	0.15	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Jn19837	CP	mg/L	1.0	0.9	11	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Jn19839	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Turbidity	M16-Jn19839	CP	NTU	120	120	3.0	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn19840	CP	mg/L	28	29	6.0	30%	Pass
Magnesium	M16-Jn19840	CP	mg/L	59	61	3.0	30%	Pass
Potassium	M16-Jn19840	CP	mg/L	10.0	12	16	30%	Pass
Sodium	M16-Jn19840	CP	mg/L	340	350	2.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Jn19842	CP	mg/L	0.03	0.03	10	30%	Pass
Nitrate & Nitrite (as N)	M16-Jn19842	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Jn19842	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Jn19842	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Jn19843	CP	NTU	6.4	6.6	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Jn19844	CP	mg/L	15	14	7.0	30%	Pass
Chloride	M16-Jn19844	CP	mg/L	1100	1000	6.4	30%	Pass
Conductivity (at 25°C)	M16-Jn19844	CP	uS/cm	3300	3600	9.0	30%	Pass
pH	M16-Jn19844	CP	pH Units	6.6	6.5	pass	30%	Pass
Sulphate (as S)	M16-Jn19844	CP	mg/L	33	33	2.1	30%	Pass
Total Dissolved Solids	M16-Jn19844	CP	mg/L	2200	2100	5.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn19844	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn19844	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn19844	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn19844	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Jn19844	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Nitrogen (as N)	M16-Jn20926	NCP	mg/L	0.4	0.3	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 23, 2016 8:26 AM**
Eurofins | mgt reference: **505399**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

EXTRA SAMPLE QC124 RECEIVED PLACED ON HOLD

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **505399-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jun 23, 2016**

Client Sample ID			MW49	MW48	MW47	MW46
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20922	M16-Jn20923	M16-Jn20924	M16-Jn20925
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	70	150	57	120
Chloride	1	mg/L	1400	900	530	2000
Conductivity (at 25°C)	1	uS/cm	4700	3000	2200	6500
pH	0.1	pH Units	4.9	4.6	8.0	7.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.34	0.15
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.11	< 0.05
Sulphate (as S)	5	mg/L	69	44	16	79
Total Dissolved Solids	10	mg/L	2700	1700	1300	4200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	250	370
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	250	370
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.05	0.59	0.57
Nitrate & Nitrite (as N)	0.05	mg/L	0.10	< 0.05	< 0.05	0.09
Nitrate (as N)	0.02	mg/L	0.10	< 0.02	< 0.02	0.09
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	0.3	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	0.9	1.4
Total Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.9	1.5
Heavy Metals						
Aluminium	0.05	mg/L	1.3	8.7	3.7	2.4
Aluminium (filtered)	0.05	mg/L	0.10	0.11	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.007	0.004	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00006	0.00043	0.00006	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00005	0.00015	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.012	0.009	0.007
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.005	0.002	0.005
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.3	17	3.4	4.0
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.10
Lead	0.001	mg/L	0.011	0.052	0.006	0.004

Client Sample ID			MW49 Water	MW48 Water	MW47 Water	MW46 Water
Sample Matrix			M16-Jn20922	M16-Jn20923	M16-Jn20924	M16-Jn20925
Eurofins mgt Sample No.			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	0.005	0.004	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.029	0.029	0.052
Manganese (filtered)	0.005	mg/L	0.011	0.029	0.026	0.047
Mercury	0.0001	mg/L	0.0005	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.021	0.006	0.005
Nickel (filtered)	0.001	mg/L	0.005	0.009	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.003	0.003	0.004
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.002
Zinc	0.005	mg/L	0.013	1.9	0.014	0.020
Zinc (filtered)	0.001	mg/L	0.012	1.9	< 0.001	0.003
Alkali Metals						
Calcium	0.5	mg/L	20	12	46	200
Magnesium	0.5	mg/L	120	64	36	170
Potassium	0.5	mg/L	12	10	3.4	8.7
Sodium	0.5	mg/L	710	460	320	890

Client Sample ID			MW45 Water	MW44 Water	MW43 Water	MW42 Water
Sample Matrix			M16-Jn20926	M16-Jn20927	M16-Jn20928	M16-Jn20929
Eurofins mgt Sample No.			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	640	800	240	1100
Chloride	1	mg/L	440	380	1200	49
Conductivity (at 25°C)	1	uS/cm	1700	1800	3700	180
pH	0.1	pH Units	7.9	8.0	6.9	4.3
Phosphate total (as P)	0.05	mg/L	0.19	1.5	0.22	0.12
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.90	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.5	13	12	< 5
Total Dissolved Solids	10	mg/L	1100	1200	^{Q19} 3200	^{Q19} 160
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	230	300	140	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	230	300	140	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.23	3.7	1.1	0.27
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.02	0.02	0.04	< 0.02
Nitrite (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	4.1	4.1	1.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	7.8	5.2	1.5
Total Nitrogen (as N)	0.2	mg/L	0.4	7.8	5.2	1.5

Client Sample ID			MW45 Water	MW44 Water	MW43 Water	MW42 Water
Sample Matrix			M16-Jn20926	M16-Jn20927	M16-Jn20928	M16-Jn20929
Eurofins mgt Sample No.			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	3.2	3.3	5.0	1.7
Aluminium (filtered)	0.05	mg/L	< 0.05	0.07	0.99	0.39
Arsenic	0.001	mg/L	0.012	0.020	0.008	0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.011	0.002	< 0.001
Cadmium	0.00005	mg/L	0.00009	< 0.00005	0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.007	0.012	0.016	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.005	< 0.001
Copper	0.001	mg/L	0.003	0.005	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	18	3.1	1.6	0.23
Iron (filtered)	0.05	mg/L	< 0.05	0.41	0.08	0.15
Lead	0.001	mg/L	0.008	0.009	0.008	0.008
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	0.010	0.008	< 0.005
Manganese (filtered)	0.005	mg/L	0.005	0.006	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.013	0.006	0.005	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	0.001	< 0.001
Selenium	0.001	mg/L	0.005	0.009	0.007	0.002
Selenium (filtered)	0.001	mg/L	0.002	0.003	0.002	0.002
Zinc	0.005	mg/L	0.007	0.042	0.007	0.008
Zinc (filtered)	0.001	mg/L	< 0.001	0.008	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	62	17	59	1.4
Magnesium	0.5	mg/L	38	33	100	3.7
Potassium	0.5	mg/L	5.5	6.1	7.1	0.9
Sodium	0.5	mg/L	230	290	560	25

Client Sample ID			SWL19-1 Water	SWL19-2 Water	SWL19-3 Water	SWL18-1 Water
Sample Matrix			M16-Jn20930	M16-Jn20931	M16-Jn20932	M16-Jn20933
Eurofins mgt Sample No.			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	120	93	40	110
Chloride	1	mg/L	830	820	1400	770
Conductivity (at 25°C)	1	uS/cm	2900	2800	4400	2600
pH	0.1	pH Units	6.4	6.5	6.1	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	0.34
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Sulphate (as S)	5	mg/L	31	26	33	19
Total Dissolved Solids	10	mg/L	1700	1600	2400	1700
Turbidity	1	NTU	8.4	37	25	8.0

Client Sample ID			SWL19-1	SWL19-2	SWL19-3	SWL18-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20930	M16-Jn20931	M16-Jn20932	M16-Jn20933
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	59
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	59
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.08
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.04
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.7	1.0	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.7	1.0	0.8
Total Nitrogen (as N)	0.2	mg/L	0.4	0.7	1.0	0.9
Heavy Metals						
Aluminium	0.05	mg/L	0.13	0.11	0.14	0.19
Aluminium (filtered)	0.05	mg/L	0.08	0.06	0.06	0.15
Arsenic	0.001	mg/L	0.001	0.003	0.003	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.001
Cadmium	0.00005	mg/L	< 0.0002	0.00005	0.00005	0.00006
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.00005	< 0.00005	0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.53	0.63	3.3	2.0
Iron (filtered)	0.05	mg/L	0.06	0.05	0.58	1.1
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.015	0.094	0.032
Manganese (filtered)	0.005	mg/L	0.011	0.012	0.092	0.030
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.004	0.005	0.003
Nickel (filtered)	0.001	mg/L	0.003	0.003	0.004	0.003
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	0.008	0.009	0.019
Zinc (filtered)	0.001	mg/L	0.004	0.005	0.009	0.009
Alkali Metals						
Calcium	0.5	mg/L	15	16	18	23
Magnesium	0.5	mg/L	63	65	94	60
Potassium	0.5	mg/L	8.2	8.2	11	10
Sodium	0.5	mg/L	440	450	680	380
Pathogens						
E.coli	1	MPN/100mL	M15 <10	10	20	300
Thermotolerant Coliforms	1	MPN/100mL	41	290	400	770

Client Sample ID			SWL18-2	SWL18-3	SWL17-1	SWL17-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20934	M16-Jn20935	M16-Jn20936	M16-Jn20937
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	160	72	170	63
Chloride	1	mg/L	700	740	130	160
Conductivity (at 25°C)	1	uS/cm	2300	2700	480	620
pH	0.1	pH Units	7.2	7.3	3.7	3.6
Phosphate total (as P)	0.05	mg/L	0.22	0.36	0.17	0.20
Phosphorus reactive (as P)	0.05	mg/L	0.16	0.11	< 0.05	0.06
Sulphate (as S)	5	mg/L	18	20	10	13
Total Dissolved Solids	10	mg/L	1500	1700	^{Q19} 520	^{Q19} 610
Turbidity	1	NTU	7.4	8.9	2.7	3.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	59	59	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	59	59	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.03	0.14	0.10
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.08	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	0.05	< 0.02	0.04
Nitrite (as N)	0.02	mg/L	0.02	0.03	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	1.8	2.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	1.9	2.4
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.9	1.9	2.4
Heavy Metals						
Aluminium	0.05	mg/L	0.23	0.27	0.85	0.96
Aluminium (filtered)	0.05	mg/L	0.19	0.23	0.72	0.86
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00009	0.00005	0.00006	0.00009
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.001	0.003
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	0.002
Iron	0.05	mg/L	1.9	2.0	0.47	0.46
Iron (filtered)	0.05	mg/L	1.1	1.1	0.38	0.37
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.029	0.032	0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.028	0.032	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	0.011	0.006	0.014
Zinc (filtered)	0.001	mg/L	0.008	0.008	0.004	0.003

Client Sample ID			SWL18-2	SWL18-3	SWL17-1	SWL17-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20934	M16-Jn20935	M16-Jn20936	M16-Jn20937
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	28	27	4.6	6.3
Magnesium	0.5	mg/L	57	60	10	13
Potassium	0.5	mg/L	9.3	11	1.7	1.4
Sodium	0.5	mg/L	340	390	62	75
Pathogens						
E.coli	1	MPN/100mL	1000	460	250	140
Thermotolerant Coliforms	1	MPN/100mL	1600	860	400	640

Client Sample ID			SWL17-3	QC127	QC122	QC123
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20938	M16-Jn20939	M16-Jn20940	M16-Jn20941
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	1800	97	-	-
Chloride	1	mg/L	210	840	-	-
Conductivity (at 25°C)	1	uS/cm	750	2700	-	-
pH	0.1	pH Units	3.5	6.4	-	-
Phosphate total (as P)	0.05	mg/L	0.43	0.06	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	15	26	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 670	1600	-	-
Turbidity	1	NTU	1.4	6.9	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	< 0.01	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.14	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	0.09	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	0.05	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	3.1	0.7	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.3	0.7	-	-
Total Nitrogen (as N)	0.2	mg/L	3.4	0.7	-	-
Heavy Metals						
Aluminium	0.05	mg/L	1.1	0.09	-	-
Aluminium (filtered)	0.05	mg/L	1.1	0.09	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.007	0.003	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00020	< 0.0002	-	-
Cadmium (filtered)	0.00005	mg/L	0.00005	< 0.0001	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	-	-
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.45	0.44	-	-

Client Sample ID			SWL17-3	QC127	QC122	QC123
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn20938	M16-Jn20939	M16-Jn20940	M16-Jn20941
Date Sampled			Jun 22, 2016	Jun 22, 2016	Jun 22, 2016	Jun 22, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.38	0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.012	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	0.011	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.004	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.003	0.004	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	7.1	14	-	-
Magnesium	0.5	mg/L	17	60	-	-
Potassium	0.5	mg/L	1.3	8.1	-	-
Sodium	0.5	mg/L	99	420	-	-
Pathogens						
E.coli	1	MPN/100mL	30	^{M15} <10	-	-
Thermotolerant Coliforms	1	MPN/100mL	120	20	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 23, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 23, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 23, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jun 23, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 23, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 23, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jun 23, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 23, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jun 24, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jun 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jun 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 24, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 24, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 24, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 23, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 23, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jun 23, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jun 23, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	113		70-130	Pass	
Chloride	%	102		70-130	Pass	
Phosphate total (as P)	%	111		70-130	Pass	
Sulphate (as S)	%	111		70-130	Pass	
Total Dissolved Solids	%	95		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Total Alkalinity (as CaCO ₃)	%	84		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	%	100		70-130	Pass	
Nitrate (as N)	%	100		70-130	Pass	
Nitrite (as N)	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	93		70-130	Pass	
Total Nitrogen (as N)	%	93		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	88		80-120	Pass	
Aluminium (filtered)	%	90		80-120	Pass	
Arsenic	%	89		80-120	Pass	
Arsenic (filtered)	%	87		80-120	Pass	
Cadmium	%	91		70-130	Pass	
Cadmium (filtered)	%	90		70-130	Pass	
Chromium	%	95		80-120	Pass	
Chromium (filtered)	%	96		80-120	Pass	
Copper	%	92		80-120	Pass	
Copper (filtered)	%	95		80-120	Pass	
Iron	%	91		80-120	Pass	
Iron (filtered)	%	92		80-120	Pass	
Lead	%	90		80-120	Pass	
Lead (filtered)	%	93		80-120	Pass	
Manganese	%	93		80-120	Pass	
Manganese (filtered)	%	96		80-120	Pass	
Mercury	%	92		75-125	Pass	
Mercury (filtered)	%	86		70-130	Pass	
Nickel	%	88		80-120	Pass	
Nickel (filtered)	%	89		80-120	Pass	
Selenium	%	106		80-120	Pass	
Selenium (filtered)	%	104		80-120	Pass	
Zinc	%	95		80-120	Pass	
Zinc (filtered)	%	87		80-120	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	95		70-130	Pass	
Magnesium	%	97		70-130	Pass	
Potassium	%	92		70-130	Pass	
Sodium	%	97		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	B16-Jn16318	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Jn20922	CP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn20922	CP	%	100		70-130	Pass	
Nitrate (as N)	M16-Jn20922	CP	%	100		70-130	Pass	
Nitrite (as N)	M16-Jn20922	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Jn21087	NCP	%	103		75-125	Pass	
Arsenic (filtered)	M16-Jn21111	NCP	%	106		70-130	Pass	
Chromium	M16-Jn21087	NCP	%	99		75-125	Pass	
Chromium (filtered)	M16-Jn21111	NCP	%	103		70-130	Pass	
Copper	M16-Jn21087	NCP	%	99		75-125	Pass	
Copper (filtered)	M16-Jn21111	NCP	%	101		70-130	Pass	
Lead	M16-Jn21087	NCP	%	99		75-125	Pass	
Lead (filtered)	M16-Jn21111	NCP	%	103		70-130	Pass	
Manganese	M16-Jn21087	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-Jn21111	NCP	%	104		70-130	Pass	
Mercury	M16-Jn21087	NCP	%	90		70-130	Pass	
Mercury (filtered)	M16-Jn21111	NCP	%	85		70-130	Pass	
Nickel	M16-Jn21087	NCP	%	98		75-125	Pass	
Nickel (filtered)	M16-Jn21111	NCP	%	102		70-130	Pass	
Selenium	M16-Jn21087	NCP	%	98		75-125	Pass	
Selenium (filtered)	M16-Jn21111	NCP	%	104		70-130	Pass	
Zinc	M16-Jn21087	NCP	%	98		75-125	Pass	
Zinc (filtered)	M16-Jn21111	NCP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn20861	NCP	%	122		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium (filtered)	M16-Jn20923	CP	%	87		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Jn20925	CP	%	122		70-130	Pass	
Sulphate (as S)	M16-Jn20925	CP	%	86		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn20926	CP	%	89		70-130	Pass	
Magnesium	M16-Jn20926	CP	%	90		70-130	Pass	
Potassium	M16-Jn20926	CP	%	83		70-130	Pass	
Sodium	M16-Jn20926	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Jn20927	CP	%	100		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Jn21331	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Jn21867	NCP	%	97		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M16-Jn20933	CP	%	79			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as S)	M16-Jn20936	CP	%	109			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Magnesium	M16-Jn20936	CP	%	90			70-130	Pass	
Sodium	M16-Jn20936	CP	%	90			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Jn20937	CP	%	125			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium (filtered)	M16-Jn20941	CP	%	95			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Jn20922	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Jn20922	CP	mg/L	0.10	0.09	14	30%	Pass	
Nitrate (as N)	M16-Jn20922	CP	mg/L	0.10	0.09	14	30%	Pass	
Nitrite (as N)	M16-Jn20922	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Jn21259	NCP	mg/L	0.30	0.28	5.0	30%	Pass	
Arsenic	M16-Jn21087	NCP	mg/L	0.002	0.002	5.0	30%	Pass	
Arsenic (filtered)	M16-Jn21111	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Jn20922	CP	mg/L	0.00005	0.00005	<1	30%	Pass	
Chromium	M16-Jn21087	NCP	mg/L	0.004	0.003	17	30%	Pass	
Chromium (filtered)	M16-Jn21111	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Jn21087	NCP	mg/L	0.004	0.004	1.0	30%	Pass	
Copper (filtered)	M16-Jn21111	NCP	mg/L	0.020	0.019	2.0	30%	Pass	
Iron	M16-Jn17512	NCP	mg/L	14	15	3.0	30%	Pass	
Iron (filtered)	M16-Jn17568	NCP	mg/L	15	15	<1	30%	Pass	
Lead	M16-Jn21087	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Jn21111	NCP	mg/L	0.001	< 0.001	11	30%	Pass	
Manganese	M16-Jn21087	NCP	mg/L	0.054	0.055	1.0	30%	Pass	
Manganese (filtered)	M16-Jn21111	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Jn21087	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Jn21111	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Jn21087	NCP	mg/L	0.004	0.004	<1	30%	Pass	
Nickel (filtered)	M16-Jn21111	NCP	mg/L	0.005	0.004	11	30%	Pass	
Selenium	M16-Jn21087	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Jn21111	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Jn21087	NCP	mg/L	0.008	0.008	4.0	30%	Pass	
Zinc (filtered)	M16-Jn21111	NCP	mg/L	0.051	0.050	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Jn20925	CP	mg/L	2000	2000	3.1	30%	Pass	
Sulphate (as S)	M16-Jn20925	CP	mg/L	79	79	<1	30%	Pass	
Total Dissolved Solids	M16-Jn20925	CP	mg/L	4200	4600	7.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Jn20926	CP	uS/cm	1700	1800	1.0	30%	Pass
pH	M16-Jn20926	CP	pH Units	7.9	7.9	pass	30%	Pass
Phosphate total (as P)	M16-Jn20926	CP	mg/L	0.19	0.18	1.0	30%	Pass
Phosphorus reactive (as P)	M16-Jn20926	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn20926	CP	mg/L	230	230	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn20926	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn20926	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn20926	CP	mg/L	230	230	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Jn20926	CP	mg/L	0.3	0.3	<1	30%	Pass
Total Nitrogen (as N)	M16-Jn20926	CP	mg/L	0.4	0.3	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn20926	CP	mg/L	62	58	6.0	30%	Pass
Magnesium	M16-Jn20926	CP	mg/L	38	36	7.0	30%	Pass
Potassium	M16-Jn20926	CP	mg/L	5.5	5.1	7.0	30%	Pass
Sodium	M16-Jn20926	CP	mg/L	230	210	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn20928	CP	mg/L	3200	3100	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Jn20930	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-Jn20930	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Jn20930	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Jn20930	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Jn20932	CP	mg/L	40	42	5.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn20933	CP	mg/L	1700	1600	2.0	30%	Pass
Turbidity	M16-Jn20933	CP	NTU	8.0	8.1	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Jn20934	CP	mg/L	0.16	0.20	20	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Jn20936	CP	mg/L	130	130	1.1	30%	Pass
Conductivity (at 25°C)	M16-Jn20936	CP	uS/cm	480	490	4.0	30%	Pass
pH	M16-Jn20936	CP	pH Units	3.7	3.7	pass	30%	Pass
Phosphate total (as P)	M16-Jn20936	CP	mg/L	0.17	0.16	5.0	30%	Pass
Sulphate (as S)	M16-Jn20936	CP	mg/L	10	10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn20936	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn20936	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn20936	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn20936	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Jn20936	CP	mg/L	1.9	2.0	5.2	30%	Pass

Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Jn20936	CP	mg/L	4.6	4.5	2.0	30%	Pass	
Magnesium	M16-Jn20936	CP	mg/L	10	10	<1	30%	Pass	
Potassium	M16-Jn20936	CP	mg/L	1.7	1.7	1.0	30%	Pass	
Sodium	M16-Jn20936	CP	mg/L	62	62	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Jn20938	CP	mg/L	670	710	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	M16-Jn20938	CP	mg/L	0.00020	0.00008	86	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium (filtered)	M16-Jn20940	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 24, 2016 8:08 AM**
Eurofins | mgt reference: **505554**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **505554-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jun 24, 2016**

Client Sample ID			MW39	MW38	MW37	MW36
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn21864	M16-Jn21865	M16-Jn21866	M16-Jn21867
Date Sampled			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	20	130	20	< 10
Chloride	1	mg/L	140	630	21	16
Conductivity (at 25°C)	1	uS/cm	550	2700	110	120
pH	0.1	pH Units	6.8	6.7	5.6	6.7
Phosphate total (as P)	0.05	mg/L	1.1	0.35	0.38	0.17
Phosphorus reactive (as P)	0.05	mg/L	0.53	0.14	0.23	0.11
Sulphate (as S)	5	mg/L	13	55	< 5	< 5
Total Dissolved Solids	10	mg/L	350	^{Q19} 2400	^{Q19} 130	^{Q19} 98
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	39	300	< 20	20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	39	300	< 20	20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.49	0.45	0.61	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.06	0.98	3.6
Nitrate (as N)	0.02	mg/L	< 0.02	0.06	0.97	3.6
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.3	16	1.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	16	2.0	0.4
Total Nitrogen (as N)	0.2	mg/L	1.8	16	3.0	4.0
Heavy Metals						
Aluminium	0.05	mg/L	0.26	6.7	0.46	0.38
Aluminium (filtered)	0.05	mg/L	0.19	3.7	0.27	0.10
Arsenic	0.001	mg/L	0.001	0.009	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.006	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	0.00010	< 0.0002	< 0.0002
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.0001	< 0.0001	0.00006
Chromium	0.001	mg/L	0.002	0.008	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.008	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Iron	0.05	mg/L	1.8	7.9	0.12	0.25
Iron (filtered)	0.05	mg/L	1.1	4.3	0.05	0.08
Lead	0.001	mg/L	< 0.001	0.005	< 0.001	0.003

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix			M16-Jn21864	M16-Jn21865	M16-Jn21866	M16-Jn21867
Eurofins mgt Sample No.			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Manganese	0.005	mg/L	0.027	0.022	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.026	0.014	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.011	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.008	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.80	0.007	< 0.005
Zinc (filtered)	0.001	mg/L	0.001	0.030	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	21	140	5.7	13
Magnesium	0.5	mg/L	7.1	84	2.1	1.5
Potassium	0.5	mg/L	16	50	1.3	< 0.5
Sodium	0.5	mg/L	68	350	10	19

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-Jn21868	M16-Jn21869	M16-Jn21870	M16-Jn21871
Eurofins mgt Sample No.			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	54	56	20	37
Chloride	1	mg/L	74	65	68	190
Conductivity (at 25°C)	1	uS/cm	320	400	350	700
pH	0.1	pH Units	4.5	5.2	7.0	5.6
Phosphate total (as P)	0.05	mg/L	0.64	2.9	0.16	0.80
Phosphorus reactive (as P)	0.05	mg/L	0.22	1.8	< 0.05	0.37
Sulphate (as S)	5	mg/L	8.1	13	< 5	9.3
Total Dissolved Solids	10	mg/L	^{Q19} 390	^{Q19} 450	^{Q19} 270	^{Q19} 530
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	69	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	69	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.70	0.16	0.33	0.33
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	4.1	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	4.0	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.09	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.3	5.5	0.9	2.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.0	5.7	1.2	2.8
Total Nitrogen (as N)	0.2	mg/L	4.0	9.8	1.2	2.8

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-Jn21868	M16-Jn21869	M16-Jn21870	M16-Jn21871
Eurofins mgt Sample No.			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.55	5.7	2.7	1.1
Aluminium (filtered)	0.05	mg/L	0.33	1.7	0.27	0.85
Arsenic	0.001	mg/L	< 0.001	0.005	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00011	0.00005	0.00005	< 0.0002
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.00005	< 0.00005	< 0.0001
Chromium	0.001	mg/L	0.002	0.006	0.006	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper	0.001	mg/L	0.003	0.006	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	3.8	3.7	0.42
Iron (filtered)	0.05	mg/L	0.16	1.4	0.20	0.32
Lead	0.001	mg/L	< 0.001	0.007	0.007	0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.011	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.010	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.005	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	< 0.005	0.010	0.011
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	7.9	11	25	5.6
Magnesium	0.5	mg/L	6.4	6.4	4.9	9.2
Potassium	0.5	mg/L	10	11	2.5	8.8
Sodium	0.5	mg/L	38	48	35	99

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL16-1 Water
Sample Matrix			M16-Jn21872	M16-Jn21873	M16-Jn21874	M16-Jn21875
Eurofins mgt Sample No.			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	18	20	43	29
Chloride	1	mg/L	68	31	47	210
Conductivity (at 25°C)	1	uS/cm	260	140	280	990
pH	0.1	pH Units	5.5	3.9	5.0	6.8
Phosphate total (as P)	0.05	mg/L	0.07	0.06	0.13	2.1
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.8
Sulphate (as S)	5	mg/L	< 5	< 5	15	30
Total Dissolved Solids	10	mg/L	^{Q19} 180	88	^{Q19} 260	^{Q19} 740
Turbidity	1	NTU	-	-	-	1.8

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL16-1 Water
Sample Matrix			M16-Jn21872	M16-Jn21873	M16-Jn21874	M16-Jn21875
Eurofins mgt Sample No.			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	67
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	67
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.23	0.02	0.24	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.08	2.7	0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.07	2.7	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	< 0.2	1.8	3.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	< 0.2	2.0	3.0
Total Nitrogen (as N)	0.2	mg/L	1.0	2.7	2.1	3.0
Heavy Metals						
Aluminium	0.05	mg/L	9.6	0.71	3.0	0.29
Aluminium (filtered)	0.05	mg/L	0.68	0.56	1.5	0.29
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00015	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	0.008	0.001	0.006	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.48	< 0.05	0.57	0.38
Iron (filtered)	0.05	mg/L	0.34	< 0.05	0.45	0.38
Lead	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Zinc	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	2.2	3.5	6.4	32
Magnesium	0.5	mg/L	5.0	2.0	11	19
Potassium	0.5	mg/L	1.7	< 0.5	1.6	26
Sodium	0.5	mg/L	37	19	29	99
Pathogens						
E.coli	1	MPN/100mL	-	-	-	290
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	480

Client Sample ID			SWL16-2	SWL16-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn21876	M16-Jn21877	M16-Jn21878	M16-Jn21879
Date Sampled			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	14	17	27
Chloride	1	mg/L	120	130	110	100
Conductivity (at 25°C)	1	uS/cm	530	560	390	390
pH	0.1	pH Units	7.0	7.3	4.9	5.3
Phosphate total (as P)	0.05	mg/L	1.0	0.95	0.38	0.37
Phosphorus reactive (as P)	0.05	mg/L	0.81	0.73	0.15	0.16
Sulphate (as S)	5	mg/L	10	11	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 390	^{Q19} 400	^{Q19} 340	^{Q19} 360
Turbidity	1	NTU	3.1	3.4	41	6.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	36	38	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	36	38	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.04	0.08	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	0.43	0.50	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.42	0.48	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.7	1.7	1.8	1.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	1.7	1.9	1.9
Total Nitrogen (as N)	0.2	mg/L	2.1	2.2	1.9	1.9
Heavy Metals						
Aluminium	0.05	mg/L	0.24	0.28	0.98	0.95
Aluminium (filtered)	0.05	mg/L	0.24	0.28	0.94	0.93
Arsenic	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0002	< 0.0002	0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.0001	< 0.0001	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.85	0.97	0.39	0.37
Iron (filtered)	0.05	mg/L	0.66	0.77	0.33	0.32
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.009	0.012	0.007	0.007
Manganese (filtered)	0.005	mg/L	0.008	0.012	0.006	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.010	0.011	0.006
Zinc (filtered)	0.001	mg/L	0.009	0.007	0.006	0.006

Client Sample ID			SWL16-2	SWL16-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn21876	M16-Jn21877	M16-Jn21878	M16-Jn21879
Date Sampled			Jun 23, 2016	Jun 23, 2016	Jun 23, 2016	Jun 23, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	19	20	5.9	5.9
Magnesium	0.5	mg/L	9.5	10	7.6	7.7
Potassium	0.5	mg/L	16	16	1.9	1.9
Sodium	0.5	mg/L	56	59	51	49
Pathogens						
E.coli	1	MPN/100mL	200	110	170	190
Thermotolerant Coliforms	1	MPN/100mL	260	110	640	280

Client Sample ID			QC129	QC130
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Jn21880	M16-Jn21881
Date Sampled			Jun 23, 2016	Jun 23, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 27, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 27, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 27, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 24, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jun 24, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 24, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jun 27, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 27, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 24, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jun 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 24, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 27, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 24, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jun 24, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jun 24, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 24, 2016	28 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 24, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jun 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jun 24, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 24, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 505554 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Jun 24, 2016 8:08 AM Due: Jul 1, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Nitrogens (speciated)	Eurofins mgt Suite B11	Alkalinity (speciated)	Zinc (filtered)	Zinc	Turbidity	Total Dissolved Solids	Thermotolerant Coliforms	Selenium (filtered)	Selenium	Phosphorus reactive (as P)	Phosphate total (as P)	pH	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Lead (filtered)	Lead	Iron (filtered)	Iron	E.coli	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium				
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Sydney Laboratory - NATA Site # 18217																																											
Brisbane Laboratory - NATA Site # 20794																																											
External Laboratory																																											
11	MW29	Jun 23, 2016		Water	M16-Jn21874	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL16-1	Jun 23, 2016		Water	M16-Jn21875	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL16-2	Jun 23, 2016		Water	M16-Jn21876	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	SWL16-3	Jun 23, 2016		Water	M16-Jn21877	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL15-1	Jun 23, 2016		Water	M16-Jn21878	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL15-2	Jun 23, 2016		Water	M16-Jn21879	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	QC129	Jun 23, 2016		Water	M16-Jn21880		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	QC130	Jun 23, 2016		Water	M16-Jn21881		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts					16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	16	18	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	113			70-130	Pass	
Chloride	%	105			70-130	Pass	
Phosphate total (as P)	%	99			70-130	Pass	
Sulphate (as S)	%	109			70-130	Pass	
Total Dissolved Solids	%	95			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	104			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	95			70-130	Pass	
Nitrate & Nitrite (as N)	%	103			70-130	Pass	
Nitrate (as N)	%	103			70-130	Pass	
Nitrite (as N)	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	102			70-130	Pass	
Total Nitrogen (as N)	%	80			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	90			80-120	Pass	
Arsenic	%	93			80-120	Pass	
Arsenic (filtered)	%	99			80-120	Pass	
Cadmium	%	91			70-130	Pass	
Cadmium (filtered)	%	90			70-130	Pass	
Chromium	%	95			80-120	Pass	
Chromium (filtered)	%	97			80-120	Pass	
Copper	%	93			80-120	Pass	
Copper (filtered)	%	97			80-120	Pass	
Iron	%	91			80-120	Pass	
Lead	%	92			80-120	Pass	
Lead (filtered)	%	98			80-120	Pass	
Manganese	%	95			80-120	Pass	
Manganese (filtered)	%	98			80-120	Pass	
Mercury	%	93			75-125	Pass	
Mercury (filtered)	%	83			70-130	Pass	
Nickel	%	89			80-120	Pass	
Nickel (filtered)	%	97			80-120	Pass	
Selenium	%	108			80-120	Pass	
Selenium (filtered)	%	92			80-120	Pass	
Zinc	%	90			80-120	Pass	
Zinc (filtered)	%	95			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	97			70-130	Pass	
Magnesium	%	98			70-130	Pass	
Potassium	%	90			70-130	Pass	
Sodium	%	106			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Jn20927	NCP	%	100		70-130	Pass	
Phosphorus reactive (as P)	M16-My08680	NCP	%	92		70-130	Pass	
Sulphate (as S)	M16-Jn22370	NCP	%	86		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Jn21216	NCP	%	112		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Jn20922	NCP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn20922	NCP	%	100		70-130	Pass	
Nitrate (as N)	M16-Jn20922	NCP	%	100		70-130	Pass	
Nitrite (as N)	M16-Jn20922	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Jn21087	NCP	%	103		75-125	Pass	
Arsenic (filtered)	B16-Jn20973	NCP	%	101		70-130	Pass	
Chromium	M16-Jn21087	NCP	%	99		75-125	Pass	
Chromium (filtered)	B16-Jn20973	NCP	%	99		70-130	Pass	
Copper	M16-Jn21087	NCP	%	99		75-125	Pass	
Copper (filtered)	B16-Jn20973	NCP	%	95		70-130	Pass	
Lead	M16-Jn21087	NCP	%	99		75-125	Pass	
Lead (filtered)	B16-Jn20973	NCP	%	97		70-130	Pass	
Manganese	M16-Jn21087	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-Jn21600	NCP	%	100		70-130	Pass	
Mercury	M16-Jn21087	NCP	%	90		70-130	Pass	
Mercury (filtered)	B16-Jn20973	NCP	%	98		70-130	Pass	
Nickel	M16-Jn21087	NCP	%	98		75-125	Pass	
Nickel (filtered)	B16-Jn20973	NCP	%	88		70-130	Pass	
Selenium	M16-Jn21087	NCP	%	98		75-125	Pass	
Selenium (filtered)	B16-Jn20973	NCP	%	98		70-130	Pass	
Zinc	M16-Jn21087	NCP	%	98		75-125	Pass	
Zinc (filtered)	B16-Jn20973	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	B16-Jn22259	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Jn21866	CP	%	89		70-130	Pass	
Cadmium (filtered)	M16-Jn21866	CP	%	105		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Jn21867	CP	%	97		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn21868	CP	%	99		70-130	Pass	
Magnesium	M16-Jn21868	CP	%	97		70-130	Pass	
Potassium	M16-Jn21868	CP	%	90		70-130	Pass	
Sodium	M16-Jn21868	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Cadmium	M16-Jn21874	CP	%	92		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Chloride	M16-Jn21878	CP	%	104			70-130	Pass	
Spike - % Recovery									
				Result 1					
Magnesium	M16-Jn21878	CP	%	98			70-130	Pass	
Sodium	M16-Jn21878	CP	%	96			70-130	Pass	
Spike - % Recovery									
				Result 1					
Alkalinity (speciated)									
Total Alkalinity (as CaCO3)	M16-Jn21879	CP	%	128			70-130	Pass	
Spike - % Recovery									
				Result 1					
Heavy Metals									
Cadmium (filtered)	M16-Jn21879	CP	%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Jn21864	CP	uS/cm	550	500	9.0	30%	Pass	
pH	M16-Jn21864	CP	pH Units	6.8	6.8	pass	30%	Pass	
Phosphate total (as P)	M16-Jn21864	CP	mg/L	1.1	1.0	10	30%	Pass	
Phosphorus reactive (as P)	M16-My08680	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO3)	M16-Jn21864	CP	mg/L	39	39	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Jn21864	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Jn21864	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-Jn21864	CP	mg/L	39	39	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Total Kjeldahl Nitrogen (as N)	M16-Jn21864	CP	mg/L	1.8	2.0	12	30%	Pass	
Total Nitrogen (as N)	M16-Jn21864	CP	mg/L	1.8	2.0	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium	M16-Jn21259	NCP	mg/L	0.30	0.28	5.0	30%	Pass	
Arsenic	M16-Jn21087	NCP	mg/L	0.002	0.002	5.0	30%	Pass	
Arsenic (filtered)	B16-Jn20973	NCP	mg/L	0.022	0.021	2.0	30%	Pass	
Cadmium	M16-Jn21864	CP	mg/L	0.00005	0.00005	<1	30%	Pass	
Cadmium (filtered)	M16-Jn21864	CP	mg/L	< 0.00005	0.00005	67	30%	Fail	Q15
Chromium	M16-Jn21087	NCP	mg/L	0.004	0.003	17	30%	Pass	
Chromium (filtered)	B16-Jn20973	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Jn21087	NCP	mg/L	0.004	0.004	1.0	30%	Pass	
Copper (filtered)	B16-Jn20973	NCP	mg/L	0.005	0.004	5.0	30%	Pass	
Iron	M16-Jn21259	NCP	mg/L	0.22	0.23	3.0	30%	Pass	
Iron (filtered)	M16-Jn17568	NCP	mg/L	15	15	<1	30%	Pass	
Lead	M16-Jn21087	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	B16-Jn20973	NCP	mg/L	0.005	0.005	<1	30%	Pass	
Manganese	M16-Jn21087	NCP	mg/L	0.054	0.055	1.0	30%	Pass	
Manganese (filtered)	B16-Jn20973	NCP	mg/L	2.7	2.7	2.0	30%	Pass	
Mercury	M16-Jn21087	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	B16-Jn20973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Jn21087	NCP	mg/L	0.004	0.004	<1	30%	Pass	
Nickel (filtered)	B16-Jn20973	NCP	mg/L	0.046	0.044	5.0	30%	Pass	
Selenium	M16-Jn21087	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-Jn20973	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Jn21087	NCP	mg/L	0.008	0.008	4.0	30%	Pass	
Zinc (filtered)	B16-Jn20973	NCP	mg/L	0.050	0.048	5.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Jn21865	CP	mg/L	0.00010	0.00010	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21866	CP	mg/L	130	120	14	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21867	CP	mg/L	98	110	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21868	CP	mg/L	390	430	9.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Jn21868	CP	mg/L	0.70	0.70	1.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Jn21868	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Jn21868	CP	mg/L	0.04	0.04	5.0	30%	Pass
Nitrite (as N)	M16-Jn21868	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn21868	CP	mg/L	7.9	7.8	1.0	30%	Pass
Magnesium	M16-Jn21868	CP	mg/L	6.4	6.5	2.0	30%	Pass
Potassium	M16-Jn21868	CP	mg/L	10	11	4.0	30%	Pass
Sodium	M16-Jn21868	CP	mg/L	38	37	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21869	CP	mg/L	450	510	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Jn21870	CP	uS/cm	350	350	1.0	30%	Pass
pH	M16-Jn21870	CP	pH Units	7.0	7.1	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn21870	CP	mg/L	69	71	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn21870	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn21870	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn21870	CP	mg/L	69	71	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21874	CP	mg/L	260	290	11	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Jn22322	NCP	NTU	2.1	1.7	19	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21876	CP	mg/L	390	380	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Jn21878	CP	mg/L	110	100	1.6	30%	Pass
Sulphate (as S)	M16-Jn21878	CP	mg/L	< 5	< 5	<1	30%	Pass
Total Dissolved Solids	M16-Jn21878	CP	mg/L	340	380	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Jn21878	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn21878	CP	mg/L	5.9	6.2	5.0	30%	Pass
Magnesium	M16-Jn21878	CP	mg/L	7.6	8.6	12	30%	Pass
Potassium	M16-Jn21878	CP	mg/L	1.9	2.0	1.0	30%	Pass
Sodium	M16-Jn21878	CP	mg/L	51	57	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn21879	CP	mg/L	360	370	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 27, 2016 8:24 AM**
Eurofins | mgt reference: **505828**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **505828-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jun 27, 2016

Client Sample ID			MW22 Water	MW21 Water	MW20 Water	MW19 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Jn23852	M16-Jn23853	M16-Jn23854	M16-Jn23855
Date Sampled			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	120	110	88	130
Chloride	1	mg/L	85	76	82	88
Conductivity (at 25°C)	1	uS/cm	530	430	330	390
pH	0.1	pH Units	4.0	4.2	4.2	3.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	34	26	14	17
Total Dissolved Solids	10	mg/L	330	270	210	220
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.11	0.06	0.13
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.7	0.09	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	1.6	0.09	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.4	0.3	0.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.5	0.4	0.7
Total Nitrogen (as N)	0.2	mg/L	0.4	2.2	0.5	0.7
Heavy Metals						
Aluminium	0.05	mg/L	5.4	7.2	23	27
Aluminium (filtered)	0.05	mg/L	5.2	6.9	6.8	10
Arsenic	0.001	mg/L	0.001	< 0.001	0.004	0.004
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.002
Cadmium	0.00005	mg/L	< 0.00005	0.00005	0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.015	0.040
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Copper	0.001	mg/L	< 0.001	< 0.001	0.003	0.007
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	21	18	2.3	1.1
Iron (filtered)	0.05	mg/L	20	17	0.96	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	0.024	0.047

Client Sample ID			MW22 Water	MW21 Water	MW20 Water	MW19 Water
Sample Matrix			M16-Jn23852	M16-Jn23853	M16-Jn23854	M16-Jn23855
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.008	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002	0.0005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.016	0.007	0.011	0.018
Nickel (filtered)	0.001	mg/L	0.014	0.007	0.008	0.010
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	0.004
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.003	< 0.001	0.001	0.001
Alkali Metals						
Calcium	0.5	mg/L	9.5	3.9	< 0.5	0.7
Magnesium	0.5	mg/L	5.9	4.7	3.2	1.6
Potassium	0.5	mg/L	1.3	1.4	< 0.5	< 0.5
Sodium	0.5	mg/L	51	39	41	48

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW15 Water
Sample Matrix			M16-Jn23856	M16-Jn23857	M16-Jn23858	M16-Jn23859
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	56	54	66	40
Chloride	1	mg/L	78	36	45	42
Conductivity (at 25°C)	1	uS/cm	280	220	230	240
pH	0.1	pH Units	4.4	4.1	4.4	3.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	13	8.9	18
Total Dissolved Solids	10	mg/L	190	150	140	160
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.10	0.01	0.15
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.09	6.5	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.08	6.5	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.3	1.5	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.4	1.5	0.5
Total Nitrogen (as N)	0.2	mg/L	0.3	0.5	8.0	0.5

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW15 Water
Sample Matrix			M16-Jn23856	M16-Jn23857	M16-Jn23858	M16-Jn23859
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	9.4	3.0	12	4.8
Aluminium (filtered)	0.05	mg/L	0.83	0.88	4.2	0.44
Arsenic	0.001	mg/L	0.003	0.002	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00006	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.011	0.008	0.011	0.011
Chromium (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.5	5.8	3.0	6.9
Iron (filtered)	0.05	mg/L	4.8	0.82	0.10	0.93
Lead	0.001	mg/L	0.018	0.020	0.025	0.014
Lead (filtered)	0.001	mg/L	0.004	0.005	0.002	0.006
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.001	0.004	0.002
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	4.0	4.3	9.3	5.0
Magnesium	0.5	mg/L	4.8	3.6	3.3	7.8
Potassium	0.5	mg/L	1.1	1.1	0.7	1.4
Sodium	0.5	mg/L	36	23	20	24

Client Sample ID			MW14 Water	MW13 Water	MW12 Water	MW11 Water
Sample Matrix			M16-Jn23860	M16-Jn23861	M16-Jn23862	M16-Jn23863
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	46	58	83	71
Chloride	1	mg/L	46	50	59	130
Conductivity (at 25°C)	1	uS/cm	280	240	340	750
pH	0.1	pH Units	4.4	4.3	4.1	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	14	24	61
Total Dissolved Solids	10	mg/L	^{Q19} 200	160	210	480
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20

Client Sample ID			MW14 Water	MW13 Water	MW12 Water	MW11 Water
Sample Matrix			M16-Jn23860	M16-Jn23861	M16-Jn23862	M16-Jn23863
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.08	0.05	0.14
Nitrate & Nitrite (as N)	0.05	mg/L	1.9	< 0.05	< 0.05	0.05
Nitrate (as N)	0.02	mg/L	1.9	0.05	0.02	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.3	0.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	2.4	0.4	0.3	0.5
Heavy Metals						
Aluminium	0.05	mg/L	28	5.1	6.2	7.7
Aluminium (filtered)	0.05	mg/L	0.50	1.5	4.7	4.9
Arsenic	0.001	mg/L	0.007	0.003	0.006	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.041	0.006	0.002	0.006
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	10	12	8.1	8.7
Iron (filtered)	0.05	mg/L	0.23	8.2	4.6	5.4
Lead	0.001	mg/L	0.048	0.006	< 0.001	0.015
Lead (filtered)	0.001	mg/L	0.002	0.001	< 0.001	0.008
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0005	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.004	0.010	0.010
Nickel (filtered)	0.001	mg/L	< 0.001	0.004	0.007	0.009
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.001	0.001	0.001	0.001
Alkali Metals						
Calcium	0.5	mg/L	9.4	3.5	2.0	2.3
Magnesium	0.5	mg/L	5.0	4.2	9.3	26
Potassium	0.5	mg/L	0.8	0.9	0.8	< 0.5
Sodium	0.5	mg/L	22	25	33	90

Client Sample ID			MW10 Water	MW9 Water	MW8 Water	MW7 Water
Sample Matrix			M16-Jn23864	M16-Jn23865	M16-Jn23866	M16-Jn23867
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	21	21	21	35
Chloride	1	mg/L	18	16	12	16
Conductivity (at 25°C)	1	uS/cm	220	110	87	100
pH	0.1	pH Units	6.9	5.1	6.0	4.4
Phosphate total (as P)	0.05	mg/L	< 0.05	0.15	0.06	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10	< 5	< 5	7.5
Total Dissolved Solids	10	mg/L	^{Q19} 220	^{Q19} 75	^{Q19} 68	69
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	42	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	42	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.23	0.23	0.01	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	4.4	0.13	1.8	1.2
Nitrate (as N)	0.02	mg/L	4.4	0.13	1.8	1.1
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	0.8	0.3	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.0	0.4	0.6
Total Nitrogen (as N)	0.2	mg/L	5.7	1.1	2.2	1.8
Heavy Metals						
Aluminium	0.05	mg/L	3.0	4.1	4.7	2.6
Aluminium (filtered)	0.05	mg/L	0.15	0.38	0.29	0.59
Arsenic	0.001	mg/L	0.004	0.002	< 0.001	0.007
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.007	0.010	0.004
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.007	0.003	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	20	3.1	0.15	15
Iron (filtered)	0.05	mg/L	0.54	0.74	< 0.05	0.19
Lead	0.001	mg/L	0.004	0.004	0.006	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.003	0.001	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.041	0.012	0.005	0.038
Zinc (filtered)	0.001	mg/L	0.006	0.008	< 0.001	0.001

Client Sample ID			MW10 Water	MW9 Water	MW8 Water	MW7 Water
Sample Matrix			M16-Jn23864	M16-Jn23865	M16-Jn23866	M16-Jn23867
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	31	5.0	7.7	5.5
Magnesium	0.5	mg/L	3.0	1.3	0.9	1.4
Potassium	0.5	mg/L	1.1	0.8	< 0.5	1.5
Sodium	0.5	mg/L	10	8.5	5.8	7.5

Client Sample ID			QC131 Water	QC132 Water	QC133 Water
Sample Matrix			M16-Jn23868	M16-Jn23869	M16-Jn23870
Eurofins mgt Sample No.			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO₃)					
Acidity (as CaCO ₃)	10	mg/L	-	-	49
Chloride	1	mg/L	-	-	75
Conductivity (at 25°C)	1	uS/cm	-	-	300
pH	0.1	pH Units	-	-	4.4
Phosphate total (as P)	0.05	mg/L	-	-	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05
Sulphate (as S)	5	mg/L	-	-	11
Total Dissolved Solids	10	mg/L	-	-	200
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	< 20
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	-	-	0.14
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	0.06
Nitrate (as N)	0.02	mg/L	-	-	0.06
Nitrite (as N)	0.02	mg/L	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.4
Total Nitrogen (as N)	0.2	mg/L	-	-	0.5
Heavy Metals					
Aluminium	0.05	mg/L	-	-	9.4
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.94
Arsenic	0.001	mg/L	-	-	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.013
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	5.2
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	3.8
Lead	0.001	mg/L	-	-	0.021
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005
Manganese	0.005	mg/L	-	-	< 0.005

Client Sample ID			QC131	QC132	QC133
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Jn23868	M16-Jn23869	M16-Jn23870
Date Sampled			Jun 24, 2016	Jun 24, 2016	Jun 24, 2016
Test/Reference	LOR	Unit			
Heavy Metals					
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	-	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	< 0.005
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Alkali Metals					
Calcium	0.5	mg/L	-	-	3.9
Magnesium	0.5	mg/L	-	-	4.7
Potassium	0.5	mg/L	-	-	1.0
Sodium	0.5	mg/L	-	-	46

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 28, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 28, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 28, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 27, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jun 27, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 27, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 28, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 28, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jun 28, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 28, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 28, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jun 28, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 27, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 27, 2016	28 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 27, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jun 28, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jun 28, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 27, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Acidity (as CaCO ₃)	%	113	70-130	Pass			
Chloride	%	102	70-130	Pass			
Phosphate total (as P)	%	104	70-130	Pass			
Sulphate (as S)	%	105	70-130	Pass			
Total Dissolved Solids	%	99	70-130	Pass			
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	105	70-130	Pass			
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	95	70-130	Pass			
Nitrate & Nitrite (as N)	%	96	70-130	Pass			
Nitrate (as N)	%	96	70-130	Pass			
Nitrite (as N)	%	99	70-130	Pass			
Total Kjeldahl Nitrogen (as N)	%	113	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	91	80-120	Pass			
Aluminium (filtered)	%	91	80-120	Pass			
Arsenic	%	103	80-120	Pass			
Arsenic (filtered)	%	103	80-120	Pass			
Cadmium	%	99	70-130	Pass			
Cadmium (filtered)	%	92	70-130	Pass			
Chromium	%	102	80-120	Pass			
Chromium (filtered)	%	102	80-120	Pass			
Copper	%	103	80-120	Pass			
Copper (filtered)	%	103	80-120	Pass			
Iron	%	103	80-120	Pass			
Iron (filtered)	%	103	80-120	Pass			
Lead	%	108	80-120	Pass			
Lead (filtered)	%	108	80-120	Pass			
Manganese	%	101	80-120	Pass			
Manganese (filtered)	%	101	80-120	Pass			
Mercury	%	102	75-125	Pass			
Mercury (filtered)	%	102	70-130	Pass			
Nickel	%	102	80-120	Pass			
Nickel (filtered)	%	102	80-120	Pass			
Selenium	%	99	80-120	Pass			
Selenium (filtered)	%	99	80-120	Pass			
Zinc	%	104	80-120	Pass			
Zinc (filtered)	%	104	80-120	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	98	70-130	Pass			
Magnesium	%	98	70-130	Pass			
Potassium	%	86	70-130	Pass			
Sodium	%	96	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Chloride	M16-Jn23852	CP	%	91	70-130	Pass	
Phosphate total (as P)	M16-Jn23852	CP	%	94	70-130	Pass	
Phosphorus reactive (as P)	M16-Jn23852	CP	%	71	70-130	Pass	
Sulphate (as S)	M16-Jn23852	CP	%	88	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn24462	NCP	%	128		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Jn24290	NCP	%	94		75-125	Pass	
Cadmium	M16-Jn23852	CP	%	97		70-130	Pass	
Iron (filtered)	M16-Jn25724	NCP	%	116		70-130	Pass	
Mercury	M16-Jn23711	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn23854	CP	%	99		70-130	Pass	
Magnesium	M16-Jn23854	CP	%	96		70-130	Pass	
Potassium	M16-Jn23854	CP	%	86		70-130	Pass	
Sodium	M16-Jn23854	CP	%	99		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Jn23858	CP	%	92		70-130	Pass	
Nitrite (as N)	M16-Jn23858	CP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	M16-Jn23858	CP	%	105		70-130	Pass	
Chromium (filtered)	M16-Jn23858	CP	%	103		70-130	Pass	
Copper (filtered)	M16-Jn23858	CP	%	102		70-130	Pass	
Lead (filtered)	M16-Jn23858	CP	%	107		70-130	Pass	
Manganese (filtered)	M16-Jn23858	CP	%	102		70-130	Pass	
Mercury (filtered)	M16-Jn23858	CP	%	109		70-130	Pass	
Nickel (filtered)	M16-Jn23858	CP	%	102		70-130	Pass	
Selenium (filtered)	M16-Jn23858	CP	%	103		70-130	Pass	
Zinc (filtered)	M16-Jn23858	CP	%	105		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Jn23859	CP	%	106		75-125	Pass	
Chromium	M16-Jn23859	CP	%	102		75-125	Pass	
Copper	M16-Jn23859	CP	%	104		75-125	Pass	
Lead	M16-Jn23859	CP	%	108		75-125	Pass	
Manganese	M16-Jn23859	CP	%	103		75-125	Pass	
Nickel	M16-Jn23859	CP	%	104		75-125	Pass	
Selenium	M16-Jn23859	CP	%	103		75-125	Pass	
Zinc	M16-Jn23859	CP	%	104		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Jn23862	CP	%	78		70-130	Pass	
Phosphate total (as P)	M16-Jn23862	CP	%	99		70-130	Pass	
Sulphate (as S)	M16-Jn23862	CP	%	89		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Jn23862	CP	%	95		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn23864	CP	%	102		70-130	Pass	
Magnesium	M16-Jn23864	CP	%	96		70-130	Pass	
Potassium	M16-Jn23864	CP	%	86		70-130	Pass	
Sodium	M16-Jn23864	CP	%	94		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Lead (filtered)	M16-Jn23868	CP	%	93			70-130	Pass	
Mercury (filtered)	M16-Jn23868	CP	%	96			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Jn23870	CP	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn23870	CP	%	89			70-130	Pass	
Nitrate (as N)	M16-Jn23870	CP	%	88			70-130	Pass	
Nitrite (as N)	M16-Jn23870	CP	%	90			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Jn23852	CP	mg/L	85	85	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Jn23852	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Jn23852	CP	mg/L	34	34	1.1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Jn24290	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	M16-Jn25724	NCP	mg/L	0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Jn23854	CP	uS/cm	330	340	<1	30%	Pass	
pH	M16-Jn23854	CP	pH Units	4.2	4.2	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn23854	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Jn23854	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn23854	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Jn23854	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Jn23854	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	M16-Jn23854	CP	mg/L	3.2	3.2	1.0	30%	Pass	
Potassium	M16-Jn23854	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M16-Jn23854	CP	mg/L	41	41	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron	M16-Jn23711	NCP	mg/L	0.36	0.34	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Jn23856	CP	uS/cm	280	280	<1	30%	Pass	
pH	M16-Jn23856	CP	pH Units	4.4	4.3	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn23856	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Jn23856	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn23856	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Jn23856	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Jn23858	CP	mg/L	0.01	0.01	16	30%	Pass	
Nitrite (as N)	M16-Jn23858	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-Jn23858	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Jn23858	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Jn23858	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Jn23858	CP	mg/L	0.002	0.002	13	30%	Pass
Manganese (filtered)	M16-Jn23858	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Jn23858	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Jn23858	CP	mg/L	0.002	0.002	15	30%	Pass
Selenium (filtered)	M16-Jn23858	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Jn23858	CP	mg/L	0.002	< 0.001	91	30%	Fail
Q15								
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn23859	CP	mg/L	160	200	19	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M16-Jn23859	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-Jn23859	CP	mg/L	0.011	0.011	3.0	30%	Pass
Copper	M16-Jn23859	CP	mg/L	0.002	0.001	19	30%	Pass
Lead	M16-Jn23859	CP	mg/L	0.014	0.014	3.0	30%	Pass
Manganese	M16-Jn23859	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Jn23859	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Jn23859	CP	mg/L	0.002	0.002	20	30%	Pass
Selenium	M16-Jn23859	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Jn23859	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Jn23860	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Jn23861	CP	mg/L	50	48	3.0	30%	Pass
Conductivity (at 25°C)	M16-Jn23861	CP	uS/cm	240	250	<1	30%	Pass
pH	M16-Jn23861	CP	pH Units	4.3	4.3	pass	30%	Pass
Phosphate total (as P)	M16-Jn23861	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Jn23861	CP	mg/L	14	14	3.3	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn23861	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn23861	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn23861	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn23861	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Jn23861	CP	mg/L	0.4	0.4	7.9	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Jn23862	CP	mg/L	59	59	<1	30%	Pass
Phosphorus reactive (as P)	M16-Jn23862	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Jn23862	CP	mg/L	24	24	1.1	30%	Pass
Total Dissolved Solids	M16-Jn23862	CP	mg/L	210	210	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Jn23864	CP	mg/L	220	230	3.0	30%	Pass

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn23864	CP	mg/L	31	31	1.0	30%	Pass
Magnesium	M16-Jn23864	CP	mg/L	3.0	3.1	<1	30%	Pass
Potassium	M16-Jn23864	CP	mg/L	1.1	1.1	2.0	30%	Pass
Sodium	M16-Jn23864	CP	mg/L	10	10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Jn23866	CP	uS/cm	87	88	<1	30%	Pass
pH	M16-Jn23866	CP	pH Units	6.0	6.0	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn23866	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn23866	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn23866	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn23866	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Jn23866	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Jn23868	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Jn23868	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Jn23868	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Jn23870	CP	mg/L	0.14	0.15	8.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Jn23870	CP	mg/L	0.06	< 0.05	16	30%	Pass
Nitrate (as N)	M16-Jn23870	CP	mg/L	0.06	0.05	16	30%	Pass
Nitrite (as N)	M16-Jn23870	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Jn23870	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 28, 2016 8:28 AM**
Eurofins | mgt reference: **505967**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **505967-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jun 28, 2016**

Client Sample ID			MW27	MW26	MW25	MW24
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn24948	M16-Jn24949	M16-Jn24950	M16-Jn24951
Date Sampled			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	39	30	37	36
Chloride	1	mg/L	38	29	28	130
Conductivity (at 25°C)	1	uS/cm	230	210	270	510
pH	0.1	pH Units	4.0	4.0	4.3	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.2	6.9	8.6	17
Total Dissolved Solids	10	mg/L	^{Q19} 190	^{Q19} 120	^{Q19} 170	^{Q19} 390
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.10	0.03	0.28
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.4	13	1.0
Nitrate (as N)	0.02	mg/L	< 0.02	2.4	13	1.0
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.8	2.0	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.9	2.0	1.2
Total Nitrogen (as N)	0.2	mg/L	0.8	3.3	15	2.2
Heavy Metals						
Aluminium	0.05	mg/L	0.84	2.3	10	4.1
Aluminium (filtered)	0.05	mg/L	0.72	0.65	0.98	1.2
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.006	0.011	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.003	0.013	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Iron	0.05	mg/L	0.74	0.69	1.1	1.2
Iron (filtered)	0.05	mg/L	0.39	0.17	< 0.05	0.31
Lead	0.001	mg/L	< 0.001	0.003	0.005	0.004

Client Sample ID			MW27 Water	MW26 Water	MW25 Water	MW24 Water
Sample Matrix			M16-Jn24948	M16-Jn24949	M16-Jn24950	M16-Jn24951
Eurofins mgt Sample No.			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.001	0.005	0.003
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	0.011	0.023	< 0.005
Zinc (filtered)	0.001	mg/L	0.009	0.011	0.015	0.003
Alkali Metals						
Calcium	0.5	mg/L	3.2	2.9	8.0	5.7
Magnesium	0.5	mg/L	5.4	3.2	7.9	12
Potassium	0.5	mg/L	2.4	1.6	3.1	1.1
Sodium	0.5	mg/L	16	17	15	66

Client Sample ID			MW23 Water	MW55 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Jn24952	M16-Jn24953	M16-Jn24954	M16-Jn24955
Eurofins mgt Sample No.			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	< 0.02	-	< 0.02
TRH C10-C14	0.05	mg/L	-	< 0.05	-	< 0.05
TRH C15-C28	0.1	mg/L	-	0.2	-	< 0.1
TRH C29-C36	0.1	mg/L	-	< 0.1	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	0.2	-	< 0.1
BTEX						
Benzene	0.001	mg/L	-	0.010	-	< 0.001
Toluene	0.001	mg/L	-	< 0.001	-	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002	-	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001	-	< 0.001
Xylenes - Total	0.003	mg/L	-	< 0.003	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	88	-	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	-	< 0.01
TRH C6-C10	0.02	mg/L	-	< 0.02	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	< 0.02	-	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05	-	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	< 0.05	-	< 0.05
TRH >C16-C34	0.1	mg/L	-	0.2	-	< 0.1
TRH >C34-C40	0.1	mg/L	-	< 0.1	-	< 0.1

Client Sample ID			MW23 Water	MW55 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Jn24952	M16-Jn24953	M16-Jn24954	M16-Jn24955
Eurofins mgt Sample No.			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	10	< 10	< 10
Chloride	1	mg/L	66	95	48	25
Conductivity (at 25°C)	1	uS/cm	460	730	300	310
pH	0.1	pH Units	6.1	6.8	6.4	7.3
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	16	45	12	11
Total Dissolved Solids	10	mg/L	^{Q19} 300	460	200	^{Q19} 270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	81	26	89
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	81	26	89
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	1.1	0.25	0.21
Nitrate & Nitrite (as N)	0.05	mg/L	12	0.07	< 0.05	2.6
Nitrate (as N)	0.02	mg/L	12	0.07	< 0.02	2.6
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	1.3	0.4	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	2.4	0.7	1.3
Total Nitrogen (as N)	0.2	mg/L	13	2.5	0.7	3.9
Heavy Metals						
Aluminium	0.05	mg/L	0.74	0.76	4.0	0.56
Aluminium (filtered)	0.05	mg/L	0.18	0.30	0.18	0.35
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.004	0.006	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.003	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Iron	0.05	mg/L	< 0.05	0.89	1.3	0.05
Iron (filtered)	0.05	mg/L	< 0.05	0.24	0.24	< 0.05
Lead	0.001	mg/L	< 0.001	0.002	0.004	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	< 0.005	0.031	< 0.005
Manganese (filtered)	0.005	mg/L	0.007	< 0.005	0.027	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.007	0.009	0.010
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.008	0.004

Client Sample ID			MW23 Water	MW55 Water	MW2 Water	MW3 Water
Sample Matrix			M16-Jn24952	M16-Jn24953	M16-Jn24954	M16-Jn24955
Eurofins mgt Sample No.			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	28	46	10	41
Magnesium	0.5	mg/L	4.9	7.8	7.8	4.1
Potassium	0.5	mg/L	5.9	14	0.9	1.4
Sodium	0.5	mg/L	32	68	32	13

Client Sample ID			SWL2-1 Water	SWL2-2 Water	SWL2-3 Water	SWL3-1 Water
Sample Matrix			M16-Jn24956	M16-Jn24957	M16-Jn24958	M16-Jn24959
Eurofins mgt Sample No.			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	59	59	59	56
Conductivity (at 25°C)	1	uS/cm	270	250	270	330
pH	0.1	pH Units	7.1	7.1	7.0	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	11	12	7.1
Total Dissolved Solids	10	mg/L	170	170	170	180
Turbidity	1	NTU	1.2	1.4	1.3	3.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	52
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	52
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.02	0.04	0.23
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.07
Nitrate (as N)	0.02	mg/L	0.02	< 0.02	0.02	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.2	0.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.2	0.2	0.5
Total Nitrogen (as N)	0.2	mg/L	0.3	0.2	0.2	0.6
Heavy Metals						
Aluminium	0.05	mg/L	0.21	0.20	0.19	0.33
Aluminium (filtered)	0.05	mg/L	0.18	0.18	0.19	0.30
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.08	0.07	0.07	0.21
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL2-1	SWL2-2	SWL2-3	SWL3-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn24956	M16-Jn24957	M16-Jn24958	M16-Jn24959
Date Sampled			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.003	0.004	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	4.3	4.5	4.3	11
Magnesium	0.5	mg/L	6.0	6.3	6.1	6.6
Potassium	0.5	mg/L	1.4	1.5	1.5	1.4
Sodium	0.5	mg/L	40	37	37	38
Pathogens						
E.coli	1	MPN/100mL	10	10	M15<10	M15<10
Thermotolerant Coliforms	1	MPN/100mL	10	10	10	10

Client Sample ID			SWL3-2	SWL3-3	QC134	QC135
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn24960	M16-Jn24961	M16-Jn24962	M16-Jn24991
Date Sampled			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Chloride	1	mg/L	56	55	-	-
Conductivity (at 25°C)	1	uS/cm	330	340	-	-
pH	0.1	pH Units	7.5	7.3	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	7.1	7.2	-	-
Total Dissolved Solids	10	mg/L	210	190	-	-
Turbidity	1	NTU	2.7	2.3	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	54	54	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	54	54	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.19	0.17	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.07	-	-
Nitrate (as N)	0.02	mg/L	0.07	0.07	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.3	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.5	-	-
Total Nitrogen (as N)	0.2	mg/L	0.9	0.6	-	-

Client Sample ID			SWL3-2	SWL3-3	QC134	QC135
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn24960	M16-Jn24961	M16-Jn24962	M16-Jn24991
Date Sampled			Jun 27, 2016	Jun 27, 2016	Jun 27, 2016	Jun 27, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.33	0.34	-	-
Aluminium (filtered)	0.05	mg/L	0.28	0.29	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.21	0.22	-	-
Iron (filtered)	0.05	mg/L	0.16	0.17	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	11	11	-	-
Magnesium	0.5	mg/L	6.6	6.4	-	-
Potassium	0.5	mg/L	1.4	1.4	-	-
Sodium	0.5	mg/L	40	40	-	-
Pathogens						
E.coli	1	MPN/100mL	M15 <10	10	-	-
Thermotolerant Coliforms	1	MPN/100mL	150	160	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Jun 29, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jun 28, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jun 28, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jun 29, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 29, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 28, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 28, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 28, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jun 28, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 28, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 28, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jun 28, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 28, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Jun 29, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 29, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Jun 29, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Jun 29, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 29, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 29, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 28, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 28, 2016	180 Day

Description

E.coli

- Method: LTM-MIC-6621

Thermotolerant Coliforms

- Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN

Testing Site

Melbourne

Melbourne

Extracted

Jun 28, 2016

Jun 28, 2016

Holding Time

24 Hour

24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	85			70-130	Pass	
TRH C10-C14	%	121			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	84			70-130	Pass	
Ethylbenzene	%	79			70-130	Pass	
m&p-Xylenes	%	78			70-130	Pass	
Xylenes - Total	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	88			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	123			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	109			70-130	Pass	
Chloride	%	98			70-130	Pass	
Phosphate total (as P)	%	87			70-130	Pass	
Sulphate (as S)	%	102			70-130	Pass	
Total Dissolved Solids	%	96			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	110			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	95			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrate & Nitrite (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	80			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	102			80-120	Pass		
Aluminium (filtered)	%	102			80-120	Pass		
Arsenic	%	99			80-120	Pass		
Arsenic (filtered)	%	99			80-120	Pass		
Cadmium	%	101			70-130	Pass		
Cadmium (filtered)	%	103			70-130	Pass		
Chromium	%	95			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	98			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron (filtered)	%	101			80-120	Pass		
Lead	%	99			80-120	Pass		
Lead (filtered)	%	99			80-120	Pass		
Manganese	%	86			80-120	Pass		
Manganese (filtered)	%	86			80-120	Pass		
Mercury	%	98			75-125	Pass		
Mercury (filtered)	%	98			70-130	Pass		
Nickel	%	100			80-120	Pass		
Nickel (filtered)	%	100			80-120	Pass		
Selenium	%	100			80-120	Pass		
Selenium (filtered)	%	100			80-120	Pass		
Zinc	%	100			80-120	Pass		
Zinc (filtered)	%	100			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	99			70-130	Pass		
Magnesium	%	102			70-130	Pass		
Potassium	%	89			70-130	Pass		
Sodium	%	85			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Jn24934	NCP	%	88		70-130	Pass	
Phosphorus reactive (as P)	M16-Jn25508	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Jn24948	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn24948	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-Jn24948	CP	%	91		70-130	Pass	
Nitrite (as N)	M16-Jn24948	CP	%	95		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Jn24934	NCP	%	79		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium (filtered)	M16-Jn25484	NCP	%	99		75-125	Pass	
Arsenic	M16-Jn24964	NCP	%	99		75-125	Pass	
Arsenic (filtered)	M16-Jn23603	NCP	%	88		70-130	Pass	
Chromium	M16-Jn24964	NCP	%	93		75-125	Pass	
Chromium (filtered)	M16-Jn23603	NCP	%	86		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Copper	M16-Jn24964	NCP	%	94		75-125	Pass	
Copper (filtered)	M16-Jn23603	NCP	%	87		70-130	Pass	
Iron (filtered)	M16-Jn25724	NCP	%	116		70-130	Pass	
Lead	M16-Jn24964	NCP	%	97		75-125	Pass	
Lead (filtered)	M16-Jn23603	NCP	%	88		70-130	Pass	
Mercury	M16-Jn24964	NCP	%	104		70-130	Pass	
Mercury (filtered)	M16-Jn23603	NCP	%	88		70-130	Pass	
Nickel	M16-Jn24964	NCP	%	95		75-125	Pass	
Nickel (filtered)	M16-Jn23603	NCP	%	87		70-130	Pass	
Selenium	M16-Jn24964	NCP	%	95		75-125	Pass	
Selenium (filtered)	M16-Jn23603	NCP	%	90		70-130	Pass	
Zinc	M16-Jn24964	NCP	%	94		75-125	Pass	
Zinc (filtered)	M16-Jn23603	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn25111	NCP	%	95		70-130	Pass	
Potassium	M16-Jn25111	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO3)	M16-Jn24949	CP	%	127		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-Jn25067	NCP	%	88		70-130	Pass	
TRH C10-C14	M16-Jn25107	NCP	%	120		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-Jn25067	NCP	%	103		70-130	Pass	
Toluene	M16-Jn25067	NCP	%	91		70-130	Pass	
Ethylbenzene	M16-Jn25067	NCP	%	85		70-130	Pass	
m&p-Xylenes	M16-Jn25067	NCP	%	80		70-130	Pass	
o-Xylene	M16-Jn25067	NCP	%	83		70-130	Pass	
Xylenes - Total	M16-Jn25067	NCP	%	81		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-Jn25067	NCP	%	88		70-130	Pass	
TRH C6-C10	M16-Jn25067	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-Jn25107	NCP	%	120		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Jn24953	CP	%	106		70-130	Pass	
Sulphate (as S)	M16-Jn24953	CP	%	108		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Manganese	M16-Jn24954	CP	%	94		75-125	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-Jn24955	CP	%	102		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Manganese (filtered)	M16-Jn24955	CP	%	89		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Magnesium	M16-Jn24957	CP	%	95			70-130	Pass	
Sodium	M16-Jn24957	CP	%	95			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Jn24958	CP	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn24958	CP	%	92			70-130	Pass	
Nitrate (as N)	M16-Jn24958	CP	%	91			70-130	Pass	
Nitrite (as N)	M16-Jn24958	CP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-Jn24958	CP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-Jn24960	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Jn24961	CP	%	96			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn25103	NCP	%	122			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium (filtered)	M16-Jn24961	CP	%	106			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Jn24948	CP	mg/L	39	38	3.0	30%	Pass	
Conductivity (at 25°C)	M16-Jn24948	CP	uS/cm	230	230	<1	30%	Pass	
pH	M16-Jn24948	CP	pH Units	4.0	4.0	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn24948	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Jn24948	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn24948	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Jn24948	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Jn24948	CP	mg/L	0.22	0.22	3.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Jn24948	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Jn24948	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Jn24948	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Jn25724	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-Jn24964	NCP	mg/L	0.001	0.001	13	30%	Pass	
Arsenic (filtered)	M16-Jn23603	NCP	mg/L	0.005	0.006	2.0	30%	Pass	
Chromium	M16-Jn24964	NCP	mg/L	0.006	0.005	12	30%	Pass	
Chromium (filtered)	M16-Jn23603	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Jn24964	NCP	mg/L	0.010	0.010	4.0	30%	Pass	
Copper (filtered)	M16-Jn23603	NCP	mg/L	0.001	0.003	72	30%	Fail	Q15
Iron (filtered)	M16-Jn25724	NCP	mg/L	0.05	< 0.05	<1	30%	Pass	
Lead	M16-Jn24964	NCP	mg/L	0.001	0.001	10	30%	Pass	
Lead (filtered)	M16-Jn23603	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M16-Jn24964	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate										
Heavy Metals					Result 1	Result 2	RPD			
Mercury (filtered)	M16-Jn23603	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass		
Nickel	M16-Jn24964	NCP	mg/L	0.007	0.006	13	30%	Pass		
Nickel (filtered)	M16-Jn23603	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Selenium	M16-Jn24964	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Selenium (filtered)	M16-Jn23603	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Zinc	M16-Jn24964	NCP	mg/L	0.020	0.018	13	30%	Pass		
Zinc (filtered)	M16-Jn23603	NCP	mg/L	0.005	0.009	53	30%	Fail	Q15	
Duplicate										
					Result 1	Result 2	RPD			
Chloride	M16-Jn24951	CP	mg/L	130	130	<1	30%	Pass		
Sulphate (as S)	M16-Jn24951	CP	mg/L	17	17	2.4	30%	Pass		
Duplicate										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1	Result 2	RPD			
TRH C6-C9	M16-Jn23546	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass		
TRH C10-C14	M16-Jn25106	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass		
TRH C15-C28	M16-Jn25106	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass		
TRH C29-C36	M16-Jn25106	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass		
Duplicate										
BTEX					Result 1	Result 2	RPD			
Benzene	M16-Jn23546	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Toluene	M16-Jn23546	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Ethylbenzene	M16-Jn23546	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
m&p-Xylenes	M16-Jn23546	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass		
o-Xylene	M16-Jn23546	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass		
Xylenes - Total	M16-Jn23546	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass		
Duplicate										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1	Result 2	RPD			
Naphthalene	M16-Jn23546	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass		
TRH C6-C10	M16-Jn23546	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass		
Duplicate										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1	Result 2	RPD			
TRH >C10-C16	M16-Jn25106	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass		
TRH >C16-C34	M16-Jn25106	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass		
TRH >C34-C40	M16-Jn25106	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass		
Duplicate										
					Result 1	Result 2	RPD			
Chloride	M16-Jn24953	CP	mg/L	95	95	<1	30%	Pass		
Sulphate (as S)	M16-Jn24953	CP	mg/L	45	44	2.6	30%	Pass		
Duplicate										
					Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Jn24954	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass		
Phosphorus reactive (as P)	M16-Jn24954	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass		
Duplicate										
Nitrogens (speciated)					Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Jn24954	CP	mg/L	0.7	0.7	<1	30%	Pass		
Duplicate										
Heavy Metals					Result 1	Result 2	RPD			
Manganese	M16-Jn24954	CP	mg/L	0.031	0.027	13	30%	Pass		
Duplicate										
					Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Jn24955	CP	mg/L	270	270	3.0	30%	Pass		
Duplicate										
Heavy Metals					Result 1	Result 2	RPD			
Manganese (filtered)	M16-Jn24955	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass		

Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-Jn24956	CP	NTU	1.2	1.1	8.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Jn24957	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Jn24957	CP	mg/L	4.5	4.4	2.0	30%	Pass
Magnesium	M16-Jn24957	CP	mg/L	6.3	6.3	1.0	30%	Pass
Potassium	M16-Jn24957	CP	mg/L	1.5	1.4	4.0	30%	Pass
Sodium	M16-Jn24957	CP	mg/L	37	37	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Jn24958	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-Jn24958	CP	uS/cm	270	270	<1	30%	Pass
pH	M16-Jn24958	CP	pH Units	7.0	7.0	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn24958	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn24958	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn24958	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn24958	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Jn24958	CP	mg/L	0.04	0.04	2.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Jn24958	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Jn24958	CP	mg/L	0.02	0.02	6.0	30%	Pass
Nitrite (as N)	M16-Jn24958	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Jn24959	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-Jn24960	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Jn24961	CP	mg/L	55	57	3.2	30%	Pass
Sulphate (as S)	M16-Jn24961	CP	mg/L	7.2	7.2	1.2	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jun 28, 2016**
Eurofins | mgt reference: **506051**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

COC STATES THAT QC138 HAS ONLY 1 CONTAINER, AND QC137 HAS 4, WHEN IT'S THE OTHER WAY AROUND. SWAPPED OVER THE TESTING FOR THOSE SAMPLES. PLEASE ADVISE IF INCORRECT. ALSO, PLEASE ALSO SEND FILTERED METALS CONTAINERS FOR NON-QC SAMPLES

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **506051-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jun 28, 2016**

Client Sample ID			MW1	MW4	MW5	MW6
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn25507	M16-Jn25508	M16-Jn25509	M16-Jn25510
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	22	18
Chloride	1	mg/L	34	20	44	30
Conductivity (at 25°C)	1	uS/cm	350	200	190	290
pH	0.1	pH Units	7.0	6.7	5.4	5.9
Phosphate total (as P)	0.05	mg/L	0.09	0.21	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.10	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.5	9.7	< 5	19
Total Dissolved Solids	10	mg/L	240	130	Q ¹⁹ 160	Q ¹⁹ 190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	71	42	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	71	42	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.64	0.61	0.30
Nitrate & Nitrite (as N)	0.05	mg/L	2.8	1.5	< 0.05	0.45
Nitrate (as N)	0.02	mg/L	2.8	1.5	< 0.02	0.45
Nitrite (as N)	0.02	mg/L	< 0.02	0.04	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.5	1.0	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.2	1.4	0.7
Total Nitrogen (as N)	0.2	mg/L	2.8	3.6	1.6	1.2
Heavy Metals						
Aluminium	0.05	mg/L	7.2	0.42	9.2	6.4
Aluminium (filtered)	0.05	mg/L	0.27	< 0.05	1.2	0.44
Arsenic	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.009	0.001	0.007	0.004
Chromium (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	< 0.001	0.004	0.002
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Iron	0.05	mg/L	0.83	< 0.05	0.73	0.35
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.51	0.09
Lead	0.001	mg/L	0.007	0.002	0.006	0.006

Client Sample ID			MW1 Water	MW4 Water	MW5 Water	MW6 Water
Sample Matrix			M16-Jn25507	M16-Jn25508	M16-Jn25509	M16-Jn25510
Eurofins mgt Sample No.						
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.003	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.023	0.005	< 0.005	0.008
Zinc (filtered)	0.001	mg/L	0.004	0.002	0.001	0.006
Alkali Metals						
Calcium	0.5	mg/L	29	24	1.3	12
Magnesium	0.5	mg/L	3.1	1.7	4.2	7.1
Potassium	0.5	mg/L	18	< 0.5	1.1	3.9
Sodium	0.5	mg/L	17	9.5	22	22

Client Sample ID			SWL1-1 Water	SWL1-2 Water	SWL1-3 Water	SWL4-1 Water
Sample Matrix			M16-Jn25511	M16-Jn25512	M16-Jn25513	M16-Jn25514
Eurofins mgt Sample No.						
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	78	73	36	130
Conductivity (at 25°C)	1	uS/cm	420	410	200	540
pH	0.1	pH Units	6.7	6.6	6.8	6.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	13	13	6.8	26
Total Dissolved Solids	10	mg/L	230	220	130	360
Turbidity	1	NTU	1.3	1.5	1.3	32
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	38	36	28	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	38	36	28	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	0.03	< 0.01	0.16
Nitrate & Nitrite (as N)	0.05	mg/L	0.42	0.41	0.06	0.15
Nitrate (as N)	0.02	mg/L	0.40	0.41	0.06	0.09
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.06
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.3	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.3	0.2	0.4
Total Nitrogen (as N)	0.2	mg/L	0.9	0.7	0.4	0.6

Client Sample ID			SWL1-1	SWL1-2	SWL1-3	SWL4-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn25511	M16-Jn25512	M16-Jn25513	M16-Jn25514
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.05	< 0.05	< 0.05	0.39
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.39
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00008	< 0.00005	0.00006
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00006
Chromium	0.001	mg/L	< 0.001	0.002	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.003	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Iron	0.05	mg/L	0.15	0.10	0.09	2.6
Iron (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	0.32
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.014	0.010	< 0.005	0.018
Manganese (filtered)	0.005	mg/L	0.013	0.009	< 0.005	0.016
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.019	0.023	0.040	0.036
Zinc (filtered)	0.001	mg/L	0.017	0.020	0.034	0.026
Alkali Metals						
Calcium	0.5	mg/L	19	18	9.4	17
Magnesium	0.5	mg/L	8.6	7.9	4.2	12
Potassium	0.5	mg/L	3.4	3.2	2.0	3.9
Sodium	0.5	mg/L	42	40	22	64
Pathogens						
E.coli	1	MPN/100mL	180	40	12	20
Thermotolerant Coliforms	1	MPN/100mL	460	120	34	230

Client Sample ID			SWL4-2	SWL4-3	QC137	QC136
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn25515	M16-Jn25516	M16-Jn25517	M16-Jn25518
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Chloride	1	mg/L	120	130	-	-
Conductivity (at 25°C)	1	uS/cm	520	530	-	-
pH	0.1	pH Units	6.6	6.6	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	23	25	-	-
Total Dissolved Solids	10	mg/L	350	350	-	-
Turbidity	1	NTU	5.6	23	-	-

Client Sample ID			SWL4-2	SWL4-3	QC137	QC136
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Jn25515	M16-Jn25516	M16-Jn25517	M16-Jn25518
Date Sampled			Jun 28, 2016	Jun 28, 2016	Jun 28, 2016	Jun 28, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.05	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.08	-	-
Nitrate (as N)	0.02	mg/L	0.07	0.08	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.2	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.3	-	-
Total Nitrogen (as N)	0.2	mg/L	0.4	0.4	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.08	0.24	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.004	-	-
Copper (filtered)	0.001	mg/L	0.002	0.004	< 0.001	< 0.001
Iron	0.05	mg/L	0.58	3.0	-	-
Iron (filtered)	0.05	mg/L	0.21	0.29	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.025	-	-
Manganese (filtered)	0.005	mg/L	0.008	0.019	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.048	0.031	-	-
Zinc (filtered)	0.001	mg/L	0.046	0.025	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	17	17	-	-
Magnesium	0.5	mg/L	11	11	-	-
Potassium	0.5	mg/L	3.9	3.9	-	-
Sodium	0.5	mg/L	61	61	-	-
Pathogens						
E.coli	1	MPN/100mL	11	M15<10	-	-
Thermotolerant Coliforms	1	MPN/100mL	340	530	-	-

Client Sample ID			QC138
Sample Matrix			Water
Eurofins mgt Sample No.			M16-Jn25519
Date Sampled			Jun 28, 2016
Test/Reference	LOR	Unit	
Acidity (as CaCO ₃)	10	mg/L	< 10
Chloride	1	mg/L	35
Conductivity (at 25°C)	1	uS/cm	330
pH	0.1	pH Units	6.9
Phosphate total (as P)	0.05	mg/L	0.10
Phosphorus reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as S)	5	mg/L	9.7
Total Dissolved Solids	10	mg/L	240
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	64
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	64
Nitrogens (speciated)			
Ammonia (as N)	0.01	mg/L	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	2.7
Nitrate (as N)	0.02	mg/L	2.7
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4
Total Nitrogen (as N)	0.2	mg/L	3.1
Heavy Metals			
Aluminium	0.05	mg/L	5.8
Aluminium (filtered)	0.05	mg/L	0.13
Arsenic	0.001	mg/L	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium	0.00005	mg/L	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium	0.001	mg/L	0.008
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	0.003
Copper (filtered)	0.001	mg/L	0.001
Iron	0.05	mg/L	0.68
Iron (filtered)	0.05	mg/L	< 0.05
Lead	0.001	mg/L	0.006
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.002
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.007
Zinc (filtered)	0.001	mg/L	< 0.001

Client Sample ID			QC138
Sample Matrix			Water
Eurofins mgt Sample No.			M16-Jn25519
Date Sampled			Jun 28, 2016
Test/Reference	LOR	Unit	
Alkali Metals			
Calcium	0.5	mg/L	27
Magnesium	0.5	mg/L	3.2
Potassium	0.5	mg/L	18
Sodium	0.5	mg/L	18

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jun 29, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jun 29, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jun 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jun 29, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jun 29, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jun 29, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jun 29, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jun 29, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jun 29, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jun 29, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jun 29, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jun 29, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 07, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jun 29, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jun 29, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jun 29, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jun 29, 2016	28 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jun 29, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jun 29, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jun 29, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jun 29, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Sodium	mg/L	< 0.5			0.5	Pass		
LCS - % Recovery								
Acidity (as CaCO3)	%	114			70-130	Pass		
Chloride	%	102			70-130	Pass		
Phosphate total (as P)	%	86			70-130	Pass		
Sulphate (as S)	%	102			70-130	Pass		
Total Dissolved Solids	%	102			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)	%	98			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	94			70-130	Pass		
Nitrate & Nitrite (as N)	%	98			70-130	Pass		
Nitrate (as N)	%	98			70-130	Pass		
Nitrite (as N)	%	102			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	92			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	84			80-120	Pass		
Aluminium (filtered)	%	102			80-120	Pass		
Arsenic	%	90			80-120	Pass		
Arsenic (filtered)	%	99			80-120	Pass		
Cadmium	%	92			70-130	Pass		
Cadmium (filtered)	%	95			70-130	Pass		
Chromium	%	90			80-120	Pass		
Chromium (filtered)	%	95			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	92			80-120	Pass		
Lead	%	96			80-120	Pass		
Lead (filtered)	%	99			80-120	Pass		
Manganese	%	88			80-120	Pass		
Manganese (filtered)	%	86			80-120	Pass		
Mercury	%	94			75-125	Pass		
Mercury (filtered)	%	98			70-130	Pass		
Nickel	%	85			80-120	Pass		
Nickel (filtered)	%	100			80-120	Pass		
Selenium	%	108			80-120	Pass		
Selenium (filtered)	%	100			80-120	Pass		
Zinc	%	100			80-120	Pass		
Zinc (filtered)	%	100			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	100			70-130	Pass		
Magnesium	%	103			70-130	Pass		
Potassium	%	90			70-130	Pass		
Sodium	%	100			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-Jn24955	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn25103	NCP	%	122		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Jn25423	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Jn25423	NCP	%	86		70-130	Pass	
Nitrate (as N)	M16-Jn25423	NCP	%	86		70-130	Pass	
Nitrite (as N)	M16-Jn25423	NCP	%	103		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-Jn25484	NCP	%	99		75-125	Pass	
Arsenic	M16-Jn25625	NCP	%	91		75-125	Pass	
Arsenic (filtered)	M16-Jn25218	NCP	%	89		70-130	Pass	
Chromium	M16-Jn25625	NCP	%	89		75-125	Pass	
Chromium (filtered)	M16-Jn25218	NCP	%	84		70-130	Pass	
Copper	M16-Jn25625	NCP	%	84		75-125	Pass	
Copper (filtered)	M16-Jn25218	NCP	%	79		70-130	Pass	
Iron (filtered)	M16-Jn25724	NCP	%	116		70-130	Pass	
Lead	M16-Jn25625	NCP	%	91		75-125	Pass	
Lead (filtered)	M16-Jn25218	NCP	%	82		70-130	Pass	
Manganese	M16-Jn25870	NCP	%	87		75-125	Pass	
Manganese (filtered)	M16-Jn25218	NCP	%	80		70-130	Pass	
Mercury	M16-Jn25625	NCP	%	94		70-130	Pass	
Mercury (filtered)	M16-Jn25711	NCP	%	82		70-130	Pass	
Nickel	M16-Jn25625	NCP	%	87		75-125	Pass	
Nickel (filtered)	M16-Jn25218	NCP	%	77		70-130	Pass	
Selenium	M16-Jn25625	NCP	%	88		75-125	Pass	
Selenium (filtered)	M16-Jn25218	NCP	%	82		70-130	Pass	
Zinc	M16-Jn25625	NCP	%	80		75-125	Pass	
Zinc (filtered)	M16-Jn25218	NCP	%	79		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Jn25111	NCP	%	95		70-130	Pass	
Magnesium	M16-Jn25111	NCP	%	92		70-130	Pass	
Potassium	M16-Jn25111	NCP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Jn25508	CP	%	100		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Jn25508	CP	%	127		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Sodium	M16-Jn25509	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Jn25513	CP	%	87		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Jn25516	CP	%	96		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Jn25516	CP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	S16-Jn26436	NCP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Jn25519	CP	%	86			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Jn25507	CP	mg/L	< 10	< 10	<1	30%	Pass	
Conductivity (at 25°C)	M16-Jn25507	CP	uS/cm	350	330	6.0	30%	Pass	
pH	M16-Jn25507	CP	pH Units	7.0	7.0	pass	30%	Pass	
Total Dissolved Solids	M16-Jn23714	NCP	mg/L	150	170	12	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn25507	CP	mg/L	71	71	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Jn25507	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn25507	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Jn25507	CP	mg/L	71	71	1.0	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Jn25507	CP	mg/L	0.02	0.02	6.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Jn25507	CP	mg/L	2.8	2.8	1.0	30%	Pass	
Nitrate (as N)	M16-Jn25507	CP	mg/L	2.8	2.8	1.0	30%	Pass	
Nitrite (as N)	M16-Jn25507	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Jn25724	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-Jn25625	NCP	mg/L	0.016	0.016	2.0	30%	Pass	
Arsenic (filtered)	M16-Jn25218	NCP	mg/L	0.009	0.009	3.0	30%	Pass	
Cadmium (filtered)	S16-Jn17666	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Jn25625	NCP	mg/L	0.006	0.006	2.0	30%	Pass	
Chromium (filtered)	M16-Jn25218	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Jn25625	NCP	mg/L	0.017	0.016	9.0	30%	Pass	
Copper (filtered)	M16-Jn25218	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Jn25724	NCP	mg/L	0.05	< 0.05	<1	30%	Pass	
Lead	M16-Jn25625	NCP	mg/L	0.006	0.005	4.0	30%	Pass	
Lead (filtered)	M16-Jn25218	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Jn25625	NCP	mg/L	0.79	0.77	3.0	30%	Pass	
Manganese (filtered)	M16-Jn25218	NCP	mg/L	0.064	0.061	4.0	30%	Pass	
Mercury	M16-Jn25625	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Jn25218	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Jn25625	NCP	mg/L	0.010	0.010	4.0	30%	Pass	
Nickel (filtered)	M16-Jn25218	NCP	mg/L	0.021	0.020	5.0	30%	Pass	
Selenium	M16-Jn25625	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Jn25218	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Jn25625	NCP	mg/L	0.051	0.049	3.0	30%	Pass	
Zinc (filtered)	M16-Jn25218	NCP	mg/L	0.015	0.014	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Jn25508	CP	mg/L	0.10	0.12	16	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M16-Jn25509	CP	mg/L	1.3	1.3	4.0	30%	Pass	
Magnesium	M16-Jn25509	CP	mg/L	4.2	4.1	2.0	30%	Pass	
Potassium	M16-Jn25509	CP	mg/L	1.1	1.1	1.0	30%	Pass	
Sodium	M16-Jn25509	CP	mg/L	22	22	2.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-Jn24956	NCP	NTU	1.2	1.1	8.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Jn25513	CP	mg/L	36	36	<1	30%	Pass
Sulphate (as S)	M16-Jn25513	CP	mg/L	6.8	6.7	1.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Jn25515	CP	uS/cm	520	520	<1	30%	Pass
pH	M16-Jn25515	CP	pH Units	6.6	6.6	pass	30%	Pass
Phosphate total (as P)	M16-Jn25515	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn25515	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn25515	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn25515	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn25515	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Jn25515	CP	mg/L	0.3	0.3	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Jn25519	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-Jn25519	CP	uS/cm	330	330	2.0	30%	Pass
pH	M16-Jn25519	CP	pH Units	6.9	6.9	pass	30%	Pass
Phosphorus reactive (as P)	M16-Jn25519	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Jn25519	CP	mg/L	64	64	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Jn25519	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Jn25519	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Jn25519	CP	mg/L	64	64	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1605663**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090

Telephone : 08 9209 7655
Date Samples Received : 22-Jun-2016 15:45
Date Analysis Commenced : 22-Jun-2016
Issue Date : 29-Jun-2016 16:04



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Trace metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC125	QC126	QC128	----	----
Client sampling date / time				[22-Jun-2016]	[22-Jun-2016]	[22-Jun-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1605663-001	EP1605663-002	EP1605663-003	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.99	7.75	6.61	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2160	6830	2960	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1860	4680	1660	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	----	0.7	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	216	338	7	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	216	338	7	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	9	38	6	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	212	79	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	560	1870	858	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	47	208	16	----	----	
Magnesium	7439-95-4	1	mg/L	38	178	64	----	----	
Sodium	7440-23-5	1	mg/L	316	897	449	----	----	
Potassium	7440-09-7	1	mg/L	4	11	10	----	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.02	0.01	0.07	----	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.002	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.024	0.034	0.009	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.003	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----	
Iron	7439-89-6	0.05	mg/L	0.07	0.22	0.08	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC125	QC126	QC128	----	----
Client sampling date / time				[22-Jun-2016]	[22-Jun-2016]	[22-Jun-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1605663-001	EP1605663-002	EP1605663-003	-----	-----	
				Result	Result	Result	----	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	40.7	4.64	0.14	----	----	
Arsenic	7440-38-2	0.001	mg/L	0.028	0.002	0.001	----	----	
Chromium	7440-47-3	0.001	mg/L	0.083	0.008	<0.001	----	----	
Copper	7440-50-8	0.001	mg/L	0.015	0.005	<0.001	----	----	
Lead	7439-92-1	0.001	mg/L	0.061	0.005	<0.001	----	----	
Manganese	7439-96-5	0.001	mg/L	0.071	0.044	0.010	----	----	
Nickel	7440-02-0	0.001	mg/L	0.064	0.006	0.003	----	----	
Selenium	7782-49-2	0.01	mg/L	0.04	<0.01	<0.01	----	----	
Zinc	7440-66-6	0.005	mg/L	0.063	0.043	0.005	----	----	
Iron	7439-89-6	0.05	mg/L	27.6	4.93	0.50	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.00005	mg/L	<0.00005	<0.00005	<0.00005	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.00005	mg/L	0.00013	0.00005	<0.00005	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.49	0.64	0.04	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	2.1	1.0	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.1	2.1	1.0	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.86	1.02	0.17	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC125	QC126	QC128	----	----
Client sampling date / time				[22-Jun-2016]	[22-Jun-2016]	[22-Jun-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1605663-001	EP1605663-002	EP1605663-003	-----	-----	
				Result	Result	Result	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser - Continued									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.15	0.07	0.15	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	21.0	63.9	26.0	----	----	
Total Cations	----	0.01	meq/L	19.3	64.3	25.8	----	----	
Ionic Balance	----	0.01	%	4.25	0.32	0.28	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	----	24	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	----	24	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1605663	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Jun-2016
Order number	: ----	Date Analysis Commenced	: 22-Jun-2016
C-O-C number	: ----	Issue Date	: 29-Jun-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 496433)									
EP1605663-001	QC125	EA005-P: pH Value	----	0.01	pH Unit	7.99	8.05	0.748	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 496435)									
EP1605663-001	QC125	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2160	2180	0.889	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 500515)									
EP1605663-001	QC125	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1860	1930	3.74	0% - 20%
EA045: Turbidity (QC Lot: 496567)									
EP1605609-001	Anonymous	EA045: Turbidity	----	0.1	NTU	1.0	1.0	0.00	No Limit
EP1605669-002	Anonymous	EA045: Turbidity	----	0.1	NTU	1710	1710	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 496434)									
EP1605663-001	QC125	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	216	219	1.32	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	216	219	1.32	0% - 20%
ED038A: Acidity (QC Lot: 500539)									
EP1605572-009	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	10	11	0.00	0% - 50%
EP1605634-003	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	24	22	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 495203)									
EP1605625-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<5	<5	0.00	No Limit
EP1605663-002	QC126	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	212	232	9.02	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 495202)									
EP1605625-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	35	36	0.00	No Limit
EP1605663-002	QC126	ED045G: Chloride	16887-00-6	1	mg/L	1870	1850	1.25	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 495954)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 495954) - continued									
EP1605620-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	442	467	5.58	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1370	1440	4.77	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	10900	11300	3.62	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	482	514	6.38	0% - 20%
EP1605663-001	QC125	ED093F: Calcium	7440-70-2	1	mg/L	47	47	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	38	38	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	316	318	0.553	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 500331)									
ES1613771-003	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.084	0.074	11.6	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.050	<0.050	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.10	<0.10	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	0.00	No Limit
ES1613702-001	Anonymous	EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.50	<0.50	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.008	0.010	23.8	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.039	0.035	11.6	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.13	0.14	14.0	0% - 50%
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit		
	EG020A-F: Iron	7439-89-6	0.05	mg/L	0.07	0.08	0.00	No Limit	
EG020T: Total Metals by ICP-MS (QC Lot: 497499)									
EP1605613-003	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.046	0.046	0.00	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.03	<0.01	89.7	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 497499) - continued									
EP1605614-005	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.440	0.441	0.254	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.068	0.071	4.66	0% - 50%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.07	0.06	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.33	0.33	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 500332)									
EP1605663-002	QC126	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1613771-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 497502)									
EP1605548-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1605614-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 497503)									
EP1605663-003	QC128	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 498983)									
EP1605671-005	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1605669-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 499013)									
ES1613774-004	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP1605669-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 495206)									
EP1605663-001	QC125	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.49	0.46	7.89	0% - 20%
EP1605663-003	QC128	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 495204)									
EP1605663-002	QC126	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 495205)									
EP1605663-001	QC125	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.00	No Limit
EP1605663-003	QC128	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 496163)									
EP1605663-001	QC125	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.1	1.9	11.8	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 496162)									
EP1605663-001	QC125	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.86	0.84	3.17	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 495201)									
EP1605625-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.15	0.15	0.00	0% - 50%

Page : 5 of 9
 Work Order : EP1605663
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 495201) - continued									
EP1605663-002	QC126	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.07	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 496433)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 496435)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.1	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 500515)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.7	83	111	
				<10	293 mg/L	103	70	130	
EA045: Turbidity (QCLot: 496567)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.1	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 496434)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	107	76	126	
				<1	200 mg/L	99.1	90	106	
ED038A: Acidity (QCLot: 500539)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	103	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 495203)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	100	89	113	
				<1	100 mg/L	99.6	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 495202)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	84	120	
				<1	1000 mg/L	98.4	84	110	
ED093F: Dissolved Major Cations (QCLot: 495954)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.0	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.7	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.8	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.9	90	110	
EG020F: Dissolved Metals by ICP-MS (QCLot: 500331)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	103	80	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.2	85	114	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.6	85	111	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 500331) - continued									
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.3	81	111	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.9	83	111	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	91.2	82	110	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.3	82	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.4	85	115	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	81	117	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	82	112	
EG020T: Total Metals by ICP-MS (QCLot: 497499)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.2	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.1	85	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	100.0	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.5	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.6	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	107	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	81	103	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.1	82	112	
EG035F: Dissolved Mercury by FIMS (QCLot: 500332)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.5	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 497502)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	100	87	115	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 497503)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.8	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 498983)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	95.4	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 499013)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	94.5	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 495206)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	104	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 495204)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 495205)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.6	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 496163)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.4	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 496162)									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 496162) - continued								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.3	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 495201)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	106	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 495203)							
EP1605663-001	QC125	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	101	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 495202)							
EP1605663-001	QC125	ED045G: Chloride	16887-00-6	1000 mg/L	99.3	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 500331)							
EP1605663-002	QC126	EG020A-F: Arsenic	7440-38-2	1 mg/L	105	70	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	97.6	70	130
		EG020A-F: Copper	7440-50-8	1 mg/L	101	70	130
		EG020A-F: Lead	7439-92-1	1 mg/L	86.7	70	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	93.9	70	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	100	70	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	101	70	130
EG020T: Total Metals by ICP-MS (QCLot: 497499)							
EP1605613-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	106	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	92.8	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	98.5	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	96.0	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	106	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	103	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	106	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 500332)							
EP1605663-003	QC128	EG035F: Mercury	7439-97-6	0.01 mg/L	93.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 497502)							
EP1605548-010	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	114	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 497503)							
EP1605687-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	102	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 498983)							
EP1605663-002	QC126	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.0	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 499013)							
EP1605663-001	QC125	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	96.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 495206)							
EP1605663-002	QC126	EK055G: Ammonia as N	7664-41-7	1 mg/L	88.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 495204)							
EP1605663-001	QC125	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 495205)							
EP1605663-002	QC126	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	107	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 496163)							
EP1605663-001	QC125	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	92.4	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 496162)							
EP1605663-001	QC125	EK067G: Total Phosphorus as P	----	1 mg/L	90.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 495201)							
EP1605663-001	QC125	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	110	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1605663	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Jun-2016
Site	: ----	Issue Date	: 29-Jun-2016
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved QC125, QC128	QC126,	----	----	----	23-Jun-2016	22-Jun-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC125, QC128	QC126,	22-Jun-2016	----	----	----	23-Jun-2016	22-Jun-2016	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC125, QC128	QC126,	22-Jun-2016	----	----	----	23-Jun-2016	20-Jul-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC125, QC128	QC126,	22-Jun-2016	----	----	----	28-Jun-2016	29-Jun-2016	✓
EA045: Turbidity								
Miscellaneous Plastic bottle -unpreserved (EA045) QC128		22-Jun-2016	----	----	----	23-Jun-2016	24-Jun-2016	✓
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC125, QC128	QC126,	22-Jun-2016	----	----	----	23-Jun-2016	06-Jul-2016	✓
ED038A: Acidity								
Miscellaneous Plastic bottle -unpreserved (ED038) QC125, QC128	QC126,	22-Jun-2016	----	----	----	28-Jun-2016	06-Jul-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC125, QC128	QC126,	22-Jun-2016	----	----	----	22-Jun-2016	20-Jul-2016	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC125, QC128	QC126,	22-Jun-2016	----	----	----	22-Jun-2016	20-Jul-2016	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC128		22-Jun-2016	----	----	----	23-Jun-2016	20-Jul-2016	✓
Miscellaneous Plastic bottle -unpreserved (ED093F) QC125,	QC126	22-Jun-2016	----	----	----	23-Jun-2016	29-Jun-2016	✓
EG020F: Dissolved Metals by ICP-MS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020A-F) QC125, QC128	QC126,	22-Jun-2016	----	----	----	28-Jun-2016	19-Dec-2016	✓
EG020T: Total Metals by ICP-MS								
Miscellaneous Nitric preserved - unfiltered (EG020A-T) QC125, QC128	QC126,	22-Jun-2016	27-Jun-2016	19-Dec-2016	✓	27-Jun-2016	19-Dec-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC125, QC128	QC126,	22-Jun-2016	----	----	----	29-Jun-2016	20-Jul-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Miscellaneous Nitric preserved - unfiltered (EG035T) QC125, QC128	QC126,	22-Jun-2016	----	----	----	27-Jun-2016	20-Jul-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC125, QC128	QC126,	22-Jun-2016	----	----	----	27-Jun-2016	19-Dec-2016	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Miscellaneous Nitric preserved - unfiltered (EG094A-T) QC125, QC128	QC126,	22-Jun-2016	27-Jun-2016	19-Dec-2016	✓	27-Jun-2016	19-Dec-2016	✓
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC125, QC128	QC126,	22-Jun-2016	----	----	----	22-Jun-2016	20-Jul-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC125, QC128	QC126, QC128	22-Jun-2016	----	----	----	22-Jun-2016	24-Jun-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC125, QC128	QC126, QC128	22-Jun-2016	----	----	----	22-Jun-2016	20-Jul-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC125, QC128	QC126, QC128	22-Jun-2016	27-Jun-2016	20-Jul-2016	✓	27-Jun-2016	20-Jul-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC125, QC128	QC126, QC128	22-Jun-2016	27-Jun-2016	20-Jul-2016	✓	27-Jun-2016	20-Jul-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC125, QC128	QC126, QC128	22-Jun-2016	----	----	----	22-Jun-2016	24-Jun-2016	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC128		22-Jun-2016	----	----	----	22-Jun-2016	23-Jun-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 7 of 10
 Work Order : EP1605663
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPT04483AA (MONITORING EVENT 2)**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 13, 2016 8:15 AM**
Eurofins | mgt reference: **507754**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **507754-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPT04483AA (MONITORING EVENT 2)**
 Received Date **Jul 13, 2016**

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-JI09428	M16-JI09429	M16-JI09430	M16-JI09431
Eurofins mgt Sample No.			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	70	47	34
Chloride	1	mg/L	330	2400	4800	1000
Conductivity (at 25°C)	1	uS/cm	1400	7700	16000	3200
pH	0.1	pH Units	6.9	6.0	6.2	4.2
Phosphate total (as P)	0.05	mg/L	0.26	0.12	1.7	0.25
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.73	< 0.05
Sulphate (as S)	5	mg/L	13	83	160	47
Total Dissolved Solids	10	mg/L	780	4200	11000	2100
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	120	32	35	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	120	32	35	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.48	0.18	0.10
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.07	44	0.10
Nitrate (as N)	0.02	mg/L	0.06	0.07	44	0.08
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.62	110	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.1	110	0.8
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.2	150	0.9
Heavy Metals						
Aluminium	0.05	mg/L	29	61	23	0.65
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.28	0.12
Arsenic	0.001	mg/L	0.038	0.13	0.017	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.016	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00051	0.0014	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.0014	< 0.00005
Chromium	0.001	mg/L	0.051	0.039	0.019	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.018	0.016	0.048	0.005
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.020	0.003
Iron	0.05	mg/L	460	74	18	14
Iron (filtered)	0.05	mg/L	0.07	35	0.85	0.73
Lead	0.001	mg/L	0.13	0.12	0.022	0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-JI09428	M16-JI09429	M16-JI09430	M16-JI09431
Eurofins mgt Sample No.			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.15	0.064	0.10	< 0.005
Manganese (filtered)	0.005	mg/L	0.031	0.057	0.095	< 0.005
Mercury	0.0001	mg/L	0.0006	0.0003	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.021	0.073	0.019	0.001
Nickel (filtered)	0.001	mg/L	0.001	0.024	0.010	< 0.001
Selenium	0.001	mg/L	0.012	0.011	0.016	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	0.012	< 0.001
Zinc	0.005	mg/L	0.090	6.7	0.75	0.010
Zinc (filtered)	0.001	mg/L	< 0.001	0.001	0.54	0.009
Alkali Metals						
Calcium	0.5	mg/L	61	49	81	20
Magnesium	0.5	mg/L	21	190	350	79
Potassium	0.5	mg/L	6.2	20	60	22
Sodium	0.5	mg/L	170	1300	2600	530

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	SWL21-1 Water
Sample Matrix			M16-JI09432	M16-JI09433	M16-JI09434	M16-JI09435
Eurofins mgt Sample No.			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	68	77	97	< 10
Chloride	1	mg/L	2700	1300	820	430
Conductivity (at 25°C)	1	uS/cm	8200	4000	2600	1400
pH	0.1	pH Units	6.2	4.9	5.0	7.3
Phosphate total (as P)	0.05	mg/L	0.28	< 0.05	0.12	0.47
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.31
Sulphate (as S)	5	mg/L	57	68	43	12
Total Dissolved Solids	10	mg/L	4500	2300	1700	880
Turbidity	1	NTU	-	-	-	7.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	46	< 20	< 20	59
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	46	< 20	< 20	59
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.84	< 0.01	0.10	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.09	< 0.05	0.06
Nitrate (as N)	0.02	mg/L	0.05	0.09	0.03	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.1	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.84	< 0.2	0.2	1.6
Total Nitrogen (as N)	0.2	mg/L	0.90	< 0.2	0.2	1.7

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	SWL21-1 Water
Sample Matrix			M16-JI09432	M16-JI09433	M16-JI09434	M16-JI09435
Eurofins mgt Sample No.			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	21	3.2	83	0.28
Aluminium (filtered)	0.05	mg/L	< 0.05	0.05	0.07	0.18
Arsenic	0.001	mg/L	0.007	0.001	0.030	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00011	0.00008	0.0024	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00005	0.0015	< 0.00005
Chromium	0.001	mg/L	0.053	0.033	0.074	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.017	0.008	0.047	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Iron	0.05	mg/L	6.7	3.3	94	0.94
Iron (filtered)	0.05	mg/L	1.2	< 0.05	< 0.05	0.59
Lead	0.001	mg/L	0.13	0.015	0.44	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.005	0.004	< 0.001
Manganese	0.005	mg/L	0.017	0.011	0.037	0.019
Manganese (filtered)	0.005	mg/L	0.016	0.010	0.024	0.014
Mercury	0.0001	mg/L	0.0007	0.0010	0.0005	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.004	0.12	0.003
Nickel (filtered)	0.001	mg/L	0.002	0.004	0.028	0.002
Selenium	0.001	mg/L	0.006	0.001	0.008	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.025	0.025	6.9	0.009
Zinc (filtered)	0.001	mg/L	0.007	0.022	3.3	0.008
Alkali Metals						
Calcium	0.5	mg/L	31	22	14	21
Magnesium	0.5	mg/L	180	120	64	32
Potassium	0.5	mg/L	36	11	11	6.6
Sodium	0.5	mg/L	1500	650	450	200
Pathogens						
E.coli	1	MPN/100mL	-	-	-	820
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	1600

Client Sample ID			SWL21-2 Water	SWL21-3 Water	SWL19-1 Water	SWL19-2 Water
Sample Matrix			M16-JI09436	M16-JI09437	M16-JI09438	M16-JI09439
Eurofins mgt Sample No.			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	80	11	< 10
Chloride	1	mg/L	360	340	450	460
Conductivity (at 25°C)	1	uS/cm	1300	1300	1400	1400
pH	0.1	pH Units	7.3	7.0	5.8	5.9
Phosphate total (as P)	0.05	mg/L	0.48	0.59	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.28	0.32	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10.0	9.8	18	18
Total Dissolved Solids	10	mg/L	760	710	850	860
Turbidity	1	NTU	7.9	9.8	1.7	3.4

Client Sample ID			SWL21-2	SWL21-3	SWL19-1	SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09436	M16-JI09437	M16-JI09438	M16-JI09439
Date Sampled			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	65	57	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	65	57	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.14	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.8	2.2	0.9	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	2.3	0.9	0.8
Total Nitrogen (as N)	0.2	mg/L	1.9	2.3	0.9	0.8
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.13	0.10	0.09
Aluminium (filtered)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00006	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	0.94	0.73	0.22	0.27
Iron (filtered)	0.05	mg/L	0.59	0.48	0.14	0.12
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	0.049	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.013	0.031	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.003	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.012	0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.006	0.012	0.004	0.005
Alkali Metals						
Calcium	0.5	mg/L	21	20	10	10
Magnesium	0.5	mg/L	27	24	29	30
Potassium	0.5	mg/L	6.4	8.9	5.3	5.2
Sodium	0.5	mg/L	180	180	220	220
Pathogens						
E.coli	1	MPN/100mL	880	2500	4	20
Thermotolerant Coliforms	1	MPN/100mL	1300	4100	4	52

Client Sample ID			SWL19-3	QC139	QC140	QC141
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09440	M16-JI09441	M16-JI09442	M16-JI09443
Date Sampled			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	-	-	75
Chloride	1	mg/L	460	-	-	2800
Conductivity (at 25°C)	1	uS/cm	1400	-	-	8200
pH	0.1	pH Units	6.2	-	-	5.8
Phosphate total (as P)	0.05	mg/L	0.06	-	-	0.20
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-	< 0.05
Sulphate (as S)	5	mg/L	17	-	-	56
Total Dissolved Solids	10	mg/L	900	-	-	4800
Turbidity	1	NTU	12	-	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-	44
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-	44
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	-	-	3.5
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-	0.05
Nitrate (as N)	0.02	mg/L	< 0.02	-	-	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	-	-	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	-	-	4.2
Total Nitrogen (as N)	0.2	mg/L	1.1	-	-	4.3
Heavy Metals						
Aluminium	0.05	mg/L	0.15	-	-	120
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-	0.023
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	-	-	0.24
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	-	-	0.072
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	-	-	23
Iron (filtered)	0.05	mg/L	0.37	< 0.05	< 0.05	2.8
Lead	0.001	mg/L	< 0.001	-	-	0.54
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	-	-	0.020
Manganese (filtered)	0.005	mg/L	0.013	< 0.005	< 0.005	0.018
Mercury	0.0001	mg/L	< 0.0001	-	-	0.0034
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	-	-	0.013
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	-	-	0.022
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-	0.12
Zinc (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	0.011

Client Sample ID			SWL19-3	QC139	QC140	QC141
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09440	M16-JI09441	M16-JI09442	M16-JI09443
Date Sampled			Jul 12, 2016	Jul 12, 2016	Jul 12, 2016	Jul 12, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	8.2	-	-	30
Magnesium	0.5	mg/L	30	-	-	170
Potassium	0.5	mg/L	4.4	-	-	35
Sodium	0.5	mg/L	230	-	-	1300
Pathogens						
E.coli	1	MPN/100mL	M15 <10	-	-	-
Thermotolerant Coliforms	1	MPN/100mL	52	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jul 14, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 13, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 13, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 13, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jul 13, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 13, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jul 14, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 13, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 14, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jul 14, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 14, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 14, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 18, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 18, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 13, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jul 13, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jul 13, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 13, 2016	28 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 13, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jul 14, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jul 14, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 13, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jul 13, 2016 8:15 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 507754	Due: Jul 20, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA (MONITORING EVENT 2)		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Eurofins mgt Suite B11	Nitrogen (Speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217										X	X																																
Brisbane Laboratory - NATA Site # 20794																																											
External Laboratory																																											
11	SWL19-1	Jul 12, 2016		Water	M16-JI09438	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL19-2	Jul 12, 2016		Water	M16-JI09439	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL19-3	Jul 12, 2016		Water	M16-JI09440	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	QC139	Jul 12, 2016		Water	M16-JI09441			X	X	X	X	X	X			X			X		X		X		X		X					X							X				
15	QC140	Jul 12, 2016		Water	M16-JI09442			X	X	X	X	X	X			X			X		X		X		X		X					X							X				
16	QC141	Jul 12, 2016		Water	M16-JI09443	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts					14	14	16	14	16	14	16	14	16	14	14	16	6	14	16	14	16	14	16	14	16	14	16	14	16	14	14	14	14	16	6	14	6	14	16	14	14	14	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	113			70-130	Pass	
Chloride	%	99			70-130	Pass	
Phosphate total (as P)	%	98			70-130	Pass	
Phosphorus reactive (as P)	%	109			70-130	Pass	
Total Dissolved Solids	%	94			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	110			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	96			70-130	Pass	
Nitrate & Nitrite (as N)	%	98			70-130	Pass	
Nitrate (as N)	%	98			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	111			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	91			80-120	Pass	
Aluminium (filtered)	%	91			80-120	Pass	
Arsenic	%	86			80-120	Pass	
Arsenic (filtered)	%	86			80-120	Pass	
Cadmium	%	98			70-130	Pass	
Cadmium (filtered)	%	98			70-130	Pass	
Chromium	%	100			80-120	Pass	
Chromium (filtered)	%	100			80-120	Pass	
Copper	%	94			80-120	Pass	
Copper (filtered)	%	94			80-120	Pass	
Iron	%	96			80-120	Pass	
Iron (filtered)	%	96			80-120	Pass	
Lead	%	82			80-120	Pass	
Lead (filtered)	%	82			80-120	Pass	
Manganese	%	101			80-120	Pass	
Manganese (filtered)	%	101			80-120	Pass	
Mercury	%	81			75-125	Pass	
Mercury (filtered)	%	81			70-130	Pass	
Nickel	%	97			80-120	Pass	
Nickel (filtered)	%	97			80-120	Pass	
Selenium	%	83			80-120	Pass	
Selenium (filtered)	%	83			80-120	Pass	
Zinc	%	84			80-120	Pass	
Zinc (filtered)	%	84			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	102			70-130	Pass	
Magnesium	%	105			70-130	Pass	
Potassium	%	91			70-130	Pass	
Sodium	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-JI09509	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-JI09428	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI09428	CP	%	93		70-130	Pass	
Nitrate (as N)	M16-JI09428	CP	%	93		70-130	Pass	
Nitrite (as N)	M16-JI09428	CP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-JI09424	NCP	%	91		75-125	Pass	
Arsenic (filtered)	M16-JI10299	NCP	%	87		70-130	Pass	
Cadmium	S16-JI13875	NCP	%	89		70-130	Pass	
Cadmium (filtered)	S16-JI09645	NCP	%	108		70-130	Pass	
Chromium	M16-JI09424	NCP	%	88		75-125	Pass	
Chromium (filtered)	M16-JI10916	NCP	%	91		70-130	Pass	
Copper	M16-JI09424	NCP	%	82		75-125	Pass	
Copper (filtered)	M16-JI10916	NCP	%	87		70-130	Pass	
Iron	S16-JI09921	NCP	%	81		75-125	Pass	
Iron (filtered)	M16-JI09595	NCP	%	94		70-130	Pass	
Lead	M16-JI09424	NCP	%	86		75-125	Pass	
Lead (filtered)	M16-JI10916	NCP	%	88		70-130	Pass	
Manganese	M16-JI10761	NCP	%	86		75-125	Pass	
Manganese (filtered)	M16-JI10916	NCP	%	90		70-130	Pass	
Mercury	M16-JI09424	NCP	%	84		70-130	Pass	
Mercury (filtered)	M16-JI09595	NCP	%	88		70-130	Pass	
Nickel	M16-JI10761	NCP	%	83		75-125	Pass	
Nickel (filtered)	M16-JI10916	NCP	%	86		70-130	Pass	
Selenium	M16-JI09424	NCP	%	90		75-125	Pass	
Selenium (filtered)	M16-JI10299	NCP	%	85		70-130	Pass	
Zinc	M16-JI10761	NCP	%	89		75-125	Pass	
Zinc (filtered)	M16-JI10299	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-JI09428	CP	%	99		70-130	Pass	
Magnesium	M16-JI09428	CP	%	93		70-130	Pass	
Potassium	M16-JI09428	CP	%	86		70-130	Pass	
Sodium	M16-JI09428	CP	%	95		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-JI09429	CP	%	83		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-JI09429	CP	%	123		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-JI09438	CP	%	98		70-130	Pass	
Magnesium	M16-JI09438	CP	%	93		70-130	Pass	
Potassium	M16-JI09438	CP	%	87		70-130	Pass	
Sodium	M16-JI09438	CP	%	93		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-JI09439	CP	%	98		70-130	Pass	
Sulphate (as S)	M16-JI09439	CP	%	83		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-JI09439	CP	%	119			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-JI09428	CP	uS/cm	1400	1400	2.0	30%	Pass	
pH	M16-JI09428	CP	pH Units	6.9	7.0	pass	30%	Pass	
Phosphorus reactive (as P)	M16-JI09428	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09428	CP	mg/L	120	120	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-JI09428	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-JI09428	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-JI09428	CP	mg/L	120	120	1.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-JI09428	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-JI09428	CP	mg/L	0.06	0.06	10	30%	Pass	
Nitrate (as N)	M16-JI09428	CP	mg/L	0.06	0.06	10	30%	Pass	
Nitrite (as N)	M16-JI09428	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-JI09455	NCP	mg/L	0.3		3.3	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-JI09428	CP	mg/L	29	28	3.0	30%	Pass	
Arsenic	M16-JI09424	NCP	mg/L	0.002	0.002	20	30%	Pass	
Arsenic (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-JI13874	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-JI09644	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-JI09424	NCP	mg/L	0.005	0.004	10	30%	Pass	
Chromium (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-JI09424	NCP	mg/L	0.044	0.043	1.0	30%	Pass	
Copper (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-JI09428	CP	mg/L	460	420	10	30%	Pass	
Iron (filtered)	M16-JI08970	NCP	mg/L	0.08	0.07	2.0	30%	Pass	
Lead	M16-JI09424	NCP	mg/L	0.011	0.011	<1	30%	Pass	
Lead (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-JI09424	NCP	mg/L	0.19	0.19	3.0	30%	Pass	
Manganese (filtered)	M16-JI08970	NCP	mg/L	0.075	0.073	3.0	30%	Pass	
Mercury	M16-JI09424	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-JI08970	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-JI09424	NCP	mg/L	0.16	0.16	<1	30%	Pass	
Nickel (filtered)	M16-JI08970	NCP	mg/L	0.003	0.004	4.0	30%	Pass	
Selenium	M16-JI09424	NCP	mg/L	0.001	< 0.001	18	30%	Pass	
Selenium (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-JI09424	NCP	mg/L	1.9	1.9	1.0	30%	Pass	
Zinc (filtered)	M16-JI08970	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-JI09428	CP	mg/L	61	60	1.0	30%	Pass	
Magnesium	M16-JI09428	CP	mg/L	21	21	1.0	30%	Pass	
Potassium	M16-JI09428	CP	mg/L	6.2	6.2	<1	30%	Pass	
Sodium	M16-JI09428	CP	mg/L	170	160	3.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI09430	CP	mg/L	47	47	2.0	30%	Pass
Total Dissolved Solids	M16-JI09430	CP	mg/L	11000	11000	8.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-JI09433	CP	uS/cm	4000	4100	2.0	30%	Pass
pH	M16-JI09433	CP	pH Units	4.9	4.9	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09433	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI09433	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI09433	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI09433	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-JI09435	CP	NTU	7.5	7.8	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-JI09436	CP	mg/L	760	760	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-JI09438	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI09438	CP	mg/L	10	10	1.0	30%	Pass
Magnesium	M16-JI09438	CP	mg/L	29	30	1.0	30%	Pass
Potassium	M16-JI09438	CP	mg/L	5.3	5.1	3.0	30%	Pass
Sodium	M16-JI09438	CP	mg/L	220	220	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-JI09439	CP	mg/L	460	470	2.6	30%	Pass
Phosphorus reactive (as P)	M16-JI09439	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-JI09439	CP	mg/L	18	18	1.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI09443	CP	mg/L	75	82	9.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW_MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 14, 2016 8:30 AM**
Eurofins | mgt reference: **507847**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **507847-W**
 Project name **NL_BASELINE GW_SW_MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Jul 14, 2016**

Client Sample ID			MW47	MW46	MW45	MW44
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09975	M16-JI09976	M16-JI09977	M16-JI09978
Date Sampled			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	33	< 10	20
Chloride	1	mg/L	480	2000	390	460
Conductivity (at 25°C)	1	uS/cm	2200	6800	1800	1700
pH	0.1	pH Units	8.0	7.4	7.8	7.4
Phosphate total (as P)	0.05	mg/L	0.27	0.14	0.14	0.67
Phosphorus reactive (as P)	0.05	mg/L	0.20	0.06	0.08	0.64
Sulphate (as S)	5	mg/L	11	74	6.7	23
Total Dissolved Solids	10	mg/L	1200	3900	1000	1400
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	250	350	210	310
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	250	350	210	310
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.97	0.48	0.24	1.7
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.33	1.1	< 0.2	1.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.6	0.5	3.1
Total Nitrogen (as N)	0.2	mg/L	1.3	1.6	0.5	3.1
Heavy Metals						
Aluminium	0.05	mg/L	3.5	1.4	1.9	2.8
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Arsenic	0.001	mg/L	0.005	0.001	0.007	0.008
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	0.004	0.005
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.004	0.004	0.010
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Copper	0.001	mg/L	0.002	0.002	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	3.7	2.6	12	2.9
Iron (filtered)	0.05	mg/L	< 0.05	0.11	< 0.05	0.45
Lead	0.001	mg/L	0.007	0.002	0.005	0.006

Client Sample ID			MW47 Water	MW46 Water	MW45 Water	MW44 Water
Sample Matrix			M16-JI09975	M16-JI09976	M16-JI09977	M16-JI09978
Eurofins mgt Sample No.			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.023	0.047	< 0.005	0.011
Manganese (filtered)	0.005	mg/L	0.021	0.047	< 0.005	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	0.002	0.007	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	0.003	0.001	0.002	0.005
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.003
Zinc	0.005	mg/L	0.012	0.064	0.011	0.024
Zinc (filtered)	0.001	mg/L	< 0.001	0.011	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	43	170	58	18
Magnesium	0.5	mg/L	34	150	33	27
Potassium	0.5	mg/L	4.0	6.8	4.8	4.6
Sodium	0.5	mg/L	280	790	200	240

Client Sample ID			MW43 Water	MW42 Water	MW41 Water	MW40 Water
Sample Matrix			M16-JI09979	M16-JI09980	M16-JI09981	M16-JI09982
Eurofins mgt Sample No.			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	52	34	150	35
Chloride	1	mg/L	1100	58	350	88
Conductivity (at 25°C)	1	uS/cm	4100	210	1400	340
pH	0.1	pH Units	6.6	4.1	3.2	5.0
Phosphate total (as P)	0.05	mg/L	0.13	< 0.05	0.92	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.95	< 0.05
Sulphate (as S)	5	mg/L	< 50	< 5	28	< 5
Total Dissolved Solids	10	mg/L	3100	180	1100	270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	140	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	140	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.2	0.24	1.1	0.33
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	< 0.05	2.0	< 0.05
Nitrate (as N)	0.02	mg/L	0.07	< 0.02	1.9	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.10	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.5	0.56	5.2	0.67
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.7	0.8	6.3	1.0
Total Nitrogen (as N)	0.2	mg/L	4.8	0.8	8.3	1.0

Client Sample ID			MW43 Water	MW42 Water	MW41 Water	MW40 Water
Sample Matrix			M16-JI09979	M16-JI09980	M16-JI09981	M16-JI09982
Eurofins mgt Sample No.			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	3.9	0.52	2.3	1.6
Aluminium (filtered)	0.05	mg/L	0.80	0.27	1.9	1.4
Arsenic	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00026	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00026	< 0.00005
Chromium	0.001	mg/L	0.013	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.008	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Iron	0.05	mg/L	1.6	0.20	0.75	0.47
Iron (filtered)	0.05	mg/L	0.11	0.18	0.47	0.39
Lead	0.001	mg/L	0.007	0.002	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	< 0.005	0.007	< 0.005
Manganese (filtered)	0.005	mg/L	0.007	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.006	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	< 0.005	0.015	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.001	0.15	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	56	1.4	14	2.4
Magnesium	0.5	mg/L	89	4.0	23	5.6
Potassium	0.5	mg/L	5.3	1.0	2.9	1.8
Sodium	0.5	mg/L	490	24	140	41

Client Sample ID			SWL18-1 Water	SWL18-2 Water	SWL18-3 Water	SWL17-1 Water
Sample Matrix			M16-JI09983	M16-JI09984	M16-JI09985	M16-JI09986
Eurofins mgt Sample No.			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	10	< 10	< 10	73
Chloride	1	mg/L	400	400	370	170
Conductivity (at 25°C)	1	uS/cm	1700	1700	1700	680
pH	0.1	pH Units	7.0	7.0	6.8	3.6
Phosphate total (as P)	0.05	mg/L	0.46	0.47	0.48	0.07
Phosphorus reactive (as P)	0.05	mg/L	0.26	0.25	0.25	< 0.05
Sulphate (as S)	5	mg/L	13	14	13	6.7
Total Dissolved Solids	10	mg/L	1000	1000	990	570
Turbidity	1	NTU	5.5	5.7	5.1	1.8

Client Sample ID			SWL18-1	SWL18-2	SWL18-3	SWL17-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09983	M16-JI09984	M16-JI09985	M16-JI09986
Date Sampled			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	63	62	62	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	63	62	62	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.04	0.05	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	0.08	0.08	0.08	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	0.05	0.08	0.03
Nitrite (as N)	0.02	mg/L	0.03	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.6	1.9	1.6	1.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	1.9	1.6	2.0
Total Nitrogen (as N)	0.2	mg/L	1.7	2.0	1.7	2.0
Heavy Metals						
Aluminium	0.05	mg/L	0.12	0.11	0.17	0.87
Aluminium (filtered)	0.05	mg/L	0.10	0.07	0.07	0.81
Arsenic	0.001	mg/L	0.001	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.003	0.002
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.001
Iron	0.05	mg/L	1.2	1.2	1.2	0.59
Iron (filtered)	0.05	mg/L	0.92	0.87	0.89	0.49
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	0.017	0.016	< 0.005
Manganese (filtered)	0.005	mg/L	0.016	0.015	0.015	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.011	0.010	< 0.005
Zinc (filtered)	0.001	mg/L	0.008	0.007	0.007	0.001
Alkali Metals						
Calcium	0.5	mg/L	21	21	21	4.7
Magnesium	0.5	mg/L	31	31	30	9.6
Potassium	0.5	mg/L	5.8	5.7	5.6	1.2
Sodium	0.5	mg/L	190	190	190	72
Pathogens						
E.coli	1	MPN/100mL	390	340	340	52
Thermotolerant Coliforms	1	MPN/100mL	460	420	510	52

Client Sample ID			SWL17-2	SWL17-3	QC147	QC142
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09987	M16-JI09988	M16-JI09989	M16-JI09990
Date Sampled			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	80	79	74	-
Chloride	1	mg/L	170	180	160	-
Conductivity (at 25°C)	1	uS/cm	690	650	690	-
pH	0.1	pH Units	3.6	3.5	3.6	-
Phosphate total (as P)	0.05	mg/L	0.06	< 0.05	0.09	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	6.9	6.7	6.1	-
Total Dissolved Solids	10	mg/L	550	570	520	-
Turbidity	1	NTU	1.6	1.5	1.8	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.09	0.11	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	0.03	0.03	0.03	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.8	2.0	1.7	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9	2.1	1.8	-
Total Nitrogen (as N)	0.2	mg/L	1.9	2.1	1.8	-
Heavy Metals						
Aluminium	0.05	mg/L	0.88	0.92	0.86	-
Aluminium (filtered)	0.05	mg/L	0.83	0.92	0.83	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	0.001	-
Copper (filtered)	0.001	mg/L	0.001	0.001	0.001	< 0.001
Iron	0.05	mg/L	0.60	0.55	0.53	-
Iron (filtered)	0.05	mg/L	0.52	0.48	0.52	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Zinc (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001

Client Sample ID			SWL17-2	SWL17-3	QC147	QC142
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI09987	M16-JI09988	M16-JI09989	M16-JI09990
Date Sampled			Jul 13, 2016	Jul 13, 2016	Jul 13, 2016	Jul 13, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	4.9	4.9	4.7	-
Magnesium	0.5	mg/L	9.5	10	8.6	-
Potassium	0.5	mg/L	1.4	1.4	1.4	-
Sodium	0.5	mg/L	72	76	65	-
Pathogens						
E.coli	1	MPN/100mL	41	30	41	-
Thermotolerant Coliforms	1	MPN/100mL	41	31	63	-

Client Sample ID			QC143
Sample Matrix			Water
Eurofins mgt Sample No.			M16-JI09991
Date Sampled			Jul 13, 2016
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jul 14, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 15, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 14, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 14, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 14, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jul 14, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 15, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 14, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jul 18, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 14, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jul 15, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 15, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jul 15, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jul 15, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 15, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 15, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 18, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 18, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 14, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 14, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jul 14, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jul 14, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Sodium	mg/L	< 0.5			0.5	Pass		
LCS - % Recovery								
Acidity (as CaCO ₃)	%	106			70-130	Pass		
Chloride	%	99			70-130	Pass		
Phosphate total (as P)	%	86			70-130	Pass		
Phosphorus reactive (as P)	%	109			70-130	Pass		
Sulphate (as S)	%	102			70-130	Pass		
Total Dissolved Solids	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	%	108			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	97			70-130	Pass		
Nitrate & Nitrite (as N)	%	98			70-130	Pass		
Nitrate (as N)	%	98			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	121			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	83			80-120	Pass		
Arsenic (filtered)	%	83			80-120	Pass		
Cadmium	%	103			70-130	Pass		
Cadmium (filtered)	%	103			70-130	Pass		
Chromium	%	100			80-120	Pass		
Chromium (filtered)	%	100			80-120	Pass		
Copper	%	90			80-120	Pass		
Copper (filtered)	%	90			80-120	Pass		
Iron	%	81			80-120	Pass		
Iron (filtered)	%	81			80-120	Pass		
Lead	%	86			80-120	Pass		
Lead (filtered)	%	86			80-120	Pass		
Manganese	%	94			80-120	Pass		
Manganese (filtered)	%	94			80-120	Pass		
Mercury	%	82			75-125	Pass		
Mercury (filtered)	%	82			70-130	Pass		
Nickel	%	91			80-120	Pass		
Nickel (filtered)	%	91			80-120	Pass		
Selenium	%	109			80-120	Pass		
Selenium (filtered)	%	84			80-120	Pass		
Zinc	%	81			80-120	Pass		
Zinc (filtered)	%	81			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	89			70-130	Pass		
Magnesium	%	93			70-130	Pass		
Potassium	%	104			70-130	Pass		
Sodium	%	85			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-J110774	NCP	%	103		70-130	Pass	
Phosphate total (as P)	M16-J110923	NCP	%	107		70-130	Pass	
Sulphate (as S)	M16-J110773	NCP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M16-JI10308	NCP	%	130			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-JI09975	CP	%	97			70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI09975	CP	%	97			70-130	Pass	
Nitrate (as N)	M16-JI09975	CP	%	97			70-130	Pass	
Nitrite (as N)	M16-JI09975	CP	%	101			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B16-JI11199	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	S16-JI13875	NCP	%	89			70-130	Pass	
Cadmium (filtered)	S16-JI09645	NCP	%	108			70-130	Pass	
Nickel (filtered)	B16-JI09923	NCP	%	94			70-130	Pass	
Zinc (filtered)	B16-JI09923	NCP	%	94			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-JI09976	CP	%	113			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Iron	S16-JI09921	NCP	%	81			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-JI09979	CP	%	95			70-130	Pass	
Magnesium	M16-JI09979	CP	%	94			70-130	Pass	
Potassium	M16-JI09979	CP	%	87			70-130	Pass	
Sodium	M16-JI09979	CP	%	106			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-JI09985	CP	%	95			70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI09985	CP	%	93			70-130	Pass	
Nitrate (as N)	M16-JI09985	CP	%	92			70-130	Pass	
Nitrite (as N)	M16-JI09985	CP	%	101			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09986	CP	%	115			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-JI09989	CP	%	88			70-130	Pass	
Magnesium	M16-JI09989	CP	%	85			70-130	Pass	
Potassium	M16-JI09989	CP	%	80			70-130	Pass	
Sodium	M16-JI09989	CP	%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-JI09975	CP	mg/L	1200	1200	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-JI09975	CP	mg/L	0.97	0.99	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-JI09975	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-JI09975	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-JI09975	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-JI09424	NCP	mg/L	29	29	<1	30%	Pass
Aluminium (filtered)	B16-JI09923	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Cadmium	S16-JI13874	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Cadmium (filtered)	S16-JI09644	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Iron	B16-JI11191	NCP	mg/L	4.9	0.67	2.0	30%	Pass
Iron (filtered)	B16-JI09923	NCP	mg/L	35	34	5.0	30%	Pass
Manganese	B16-JI11191	NCP	mg/L	0.59	0.17	6.0	30%	Pass
Nickel (filtered)	B16-JI09923	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Zinc (filtered)	B16-JI09923	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Phosphorus reactive (as P)				Result 1	Result 2	RPD		
M16-JI09976	CP	mg/L	0.06	0.06	3.2	30%	Pass	
Duplicate								
Conductivity (at 25°C)				Result 1	Result 2	RPD		
M16-JI09977	CP	uS/cm	1800	1800	1.0	30%	Pass	
pH				Result 1	Result 2	RPD		
M16-JI09977	CP	pH Units	7.8	7.8	pass	30%	Pass	
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Copper	S16-JI09921	NCP	mg/L	0.78	0.80	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI09979	CP	mg/L	56	57	2.0	30%	Pass
Magnesium	M16-JI09979	CP	mg/L	89	91	3.0	30%	Pass
Potassium	M16-JI09979	CP	mg/L	5.3	6.0	13	30%	Pass
Sodium	M16-JI09979	CP	mg/L	490	500	4.0	30%	Pass
Duplicate								
Phosphate total (as P)				Result 1	Result 2	RPD		
M16-JI09980	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids				Result 1	Result 2	RPD		
M16-JI09980	CP	mg/L	180	170	7.0	30%	Pass	
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-JI09980	CP	mg/L	0.8	0.8	<1	30%	Pass
Duplicate								
Conductivity (at 25°C)				Result 1	Result 2	RPD		
M16-JI09983	CP	uS/cm	1700	1700	<1	30%	Pass	
pH				Result 1	Result 2	RPD		
M16-JI09983	CP	pH Units	7.0	7.0	pass	30%	Pass	
Turbidity				Result 1	Result 2	RPD		
M16-JI09983	CP	NTU	5.5	6.0	9.0	30%	Pass	
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09983	CP	mg/L	63	62	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI09983	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI09983	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI09983	CP	mg/L	63	62	1.0	30%	Pass
Duplicate								
Chloride				Result 1	Result 2	RPD		
M16-JI09985	CP	mg/L	370	400	8.2	30%	Pass	
Conductivity (at 25°C)				Result 1	Result 2	RPD		
M16-JI09985	CP	uS/cm	1700	1400	15	30%	Pass	
pH				Result 1	Result 2	RPD		
M16-JI09985	CP	pH Units	6.8	6.9	pass	30%	Pass	
Sulphate (as S)				Result 1	Result 2	RPD		
M16-JI09985	CP	mg/L	13	13	1.8	30%	Pass	
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09985	CP	mg/L	62	53	15	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI09985	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI09985	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI09985	CP	mg/L	62	53	15	30%	Pass

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI09985	CP	mg/L	0.05	0.05	6.0	30%	Pass
Nitrate & Nitrite (as N)	M16-JI09985	CP	mg/L	0.08	0.07	8.0	30%	Pass
Nitrate (as N)	M16-JI09985	CP	mg/L	0.08	0.07	8.0	30%	Pass
Nitrite (as N)	M16-JI09985	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI09986	CP	mg/L	73	74	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-JI09987	CP	uS/cm	690	690	<1	30%	Pass
pH	M16-JI09987	CP	pH Units	3.6	3.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI09987	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI09987	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI09987	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI09987	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Magnesium	M16-JI09989	CP	mg/L	8.6	10.0	15	30%	Pass
Sodium	M16-JI09989	CP	mg/L	65	75	14	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPT04483AA - MONITORING EVENT JULY**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 15, 2016 8:23 AM**
Eurofins | mgt reference: **508068**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **508068-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA - MONITORING EVENT JULY
Received Date Jul 15, 2016

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-JI11833	M16-JI11834	M16-JI11835	M16-JI11836
Date Sampled			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Test/Reference	LOR	Unit				
Chloride	1	mg/L	99	1000	18	16
Conductivity (at 25°C)	1	uS/cm	470	4200	110	130
pH	0.1	pH Units	6.5	6.3	5.3	6.8
Phosphate total (as P)	0.05	mg/L	1.1	0.39	0.25	0.15
Phosphorus reactive (as P)	0.05	mg/L	0.87	0.14	0.15	0.13
Sulphate (as S)	5	mg/L	7.4	100	7.0	< 5
Total Dissolved Solids	10	mg/L	340	3000	96	110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	47	180	< 20	28
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	47	180	< 20	28
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.29	0.64	0.20	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.46	3.4
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.44	3.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	7.8	< 0.2	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	8.4	< 0.2	1.1
Total Nitrogen (as N)	0.2	mg/L	1.7	8.4	0.5	4.5
Heavy Metals						
Aluminium	0.05	mg/L	0.25	2.6	0.30	0.23
Aluminium (filtered)	0.05	mg/L	0.16	1.4	0.21	0.10
Arsenic	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	0.00009	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	1.0	5.7	0.08	0.16
Iron (filtered)	0.05	mg/L	0.84	4.7	0.05	0.07
Lead	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix			M16-JI11833	M16-JI11834	M16-JI11835	M16-JI11836
Eurofins mgt Sample No.			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.019	0.020	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.019	0.019	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.007	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.28	< 0.005	0.006
Zinc (filtered)	0.001	mg/L	0.001	0.010	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	17	180	5.3	15
Magnesium	0.5	mg/L	6.6	88	1.9	1.8
Potassium	0.5	mg/L	14	50	0.9	0.6
Sodium	0.5	mg/L	50	470	9.6	6.4

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-JI11837	M16-JI11838	M16-JI11839	M16-JI11840
Eurofins mgt Sample No.			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Chloride	1	mg/L	78	91	65	240
Conductivity (at 25°C)	1	uS/cm	370	420	360	960
pH	0.1	pH Units	4.2	4.7	6.6	5.5
Phosphate total (as P)	0.05	mg/L	0.41	5.8	0.10	1.2
Phosphorus reactive (as P)	0.05	mg/L	0.41	5.4	0.07	1.2
Sulphate (as S)	5	mg/L	7.7	20	< 5	15
Total Dissolved Solids	10	mg/L	400	520	270	680
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	72	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	72	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.46	0.22	0.47	0.40
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.52	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.06	0.37	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	0.15	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.5	3.5	0.8	3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.0	3.7	1.2	3.4
Total Nitrogen (as N)	0.2	mg/L	2.1	4.2	1.2	3.4
Heavy Metals						
Aluminium	0.05	mg/L	0.59	14	0.89	1.5
Aluminium (filtered)	0.05	mg/L	0.34	2.0	0.28	1.2
Arsenic	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-JI11837	M16-JI11838	M16-JI11839	M16-JI11840
Eurofins mgt Sample No.			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.013	0.002	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Copper	0.001	mg/L	0.002	0.007	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Iron	0.05	mg/L	0.24	4.5	1.2	0.52
Iron (filtered)	0.05	mg/L	0.20	1.6	0.14	0.38
Lead	0.001	mg/L	< 0.001	0.008	0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.003	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.009	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.008	< 0.005
Mercury	0.0001	mg/L	0.0002	0.0002	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.005	0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	0.006	0.009	< 0.005
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	8.4	13	23	13
Magnesium	0.5	mg/L	6.9	6.2	5.1	11
Potassium	0.5	mg/L	13	14	2.6	13
Sodium	0.5	mg/L	38	50	32	120

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL16-1 Water
Sample Matrix			M16-JI11841	M16-JI11842	M16-JI11843	M16-JI11844
Eurofins mgt Sample No.			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Chloride	1	mg/L	85	34	42	220
Conductivity (at 25°C)	1	uS/cm	450	200	290	920
pH	0.1	pH Units	4.5	4.0	5.0	6.6
Phosphate total (as P)	0.05	mg/L	1.1	0.12	< 0.05	1.4
Phosphorus reactive (as P)	0.05	mg/L	0.96	0.06	0.13	1.4
Sulphate (as S)	5	mg/L	17	5.2	17	26
Total Dissolved Solids	10	mg/L	470	110	230	680
Turbidity	1	NTU	-	-	-	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	71
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	71

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL16-1 Water
Sample Matrix			M16-JI11841	M16-JI11842	M16-JI11843	M16-JI11844
Eurofins mgt Sample No.			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.11	0.07	0.24	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	1.8	1.4	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	1.7	1.4	< 0.02	0.05
Nitrite (as N)	0.02	mg/L	0.04	< 0.02	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.4	< 0.2	< 0.2	2.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.5	< 0.2	0.3	2.8
Total Nitrogen (as N)	0.2	mg/L	5.3	1.4	0.3	2.8
Heavy Metals						
Aluminium	0.05	mg/L	10	0.94	2.9	0.38
Aluminium (filtered)	0.05	mg/L	2.2	0.46	1.4	0.38
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.003	0.005	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.001	0.005	< 0.001
Copper (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.39	0.09	0.56	0.40
Iron (filtered)	0.05	mg/L	0.24	< 0.05	0.33	0.34
Lead	0.001	mg/L	0.001	0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.006	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.004	0.002	0.001
Alkali Metals						
Calcium	0.5	mg/L	13	2.7	6.1	28
Magnesium	0.5	mg/L	10	2.8	10	17
Potassium	0.5	mg/L	3.0	0.8	1.6	24
Sodium	0.5	mg/L	55	19	26	99
Pathogens						
E.coli	1	MPN/100mL	-	-	-	85
Thermotolerant Coliforms	1	cfu/100mL	-	-	-	85

Client Sample ID			SWL16-2	SWL16-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI11845	M16-JI11846	M16-JI11847	M16-JI11848
Date Sampled			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Test/Reference	LOR	Unit				
Chloride	1	mg/L	110	110	140	140
Conductivity (at 25°C)	1	uS/cm	490	490	500	520
pH	0.1	pH Units	6.9	6.8	5.0	4.8
Phosphate total (as P)	0.05	mg/L	0.26	0.17	< 0.05	0.37
Phosphorus reactive (as P)	0.05	mg/L	0.26	0.17	< 0.05	0.29
Sulphate (as S)	5	mg/L	9.6	10	5.9	6.0
Total Dissolved Solids	10	mg/L	360	360	410	410
Turbidity	1	NTU	2.8	3.8	6.7	2.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	38	36	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	38	36	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.04	0.09	0.12
Nitrate & Nitrite (as N)	0.05	mg/L	0.53	0.74	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.51	0.71	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	0.7	1.0	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.7	1.1	1.7
Total Nitrogen (as N)	0.2	mg/L	1.7	1.4	1.1	1.7
Heavy Metals						
Aluminium	0.05	mg/L	0.32	0.34	0.93	0.87
Aluminium (filtered)	0.05	mg/L	0.32	0.34	0.81	0.87
Arsenic	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00007	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.83	0.82	0.38	0.35
Iron (filtered)	0.05	mg/L	0.59	0.66	0.31	0.29
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.007	0.009	0.007
Manganese (filtered)	0.005	mg/L	0.005	0.007	0.008	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.009	0.011	0.009
Zinc (filtered)	0.001	mg/L	0.007	0.008	0.010	0.007

Client Sample ID			SWL16-2	SWL16-3	SWL15-1	SWL15-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI11845	M16-JI11846	M16-JI11847	M16-JI11848
Date Sampled			Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	Jul 14, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	15	16	7.5	6.9
Magnesium	0.5	mg/L	7.9	8.1	11	11
Potassium	0.5	mg/L	13	13	2.6	2.7
Sodium	0.5	mg/L	48	50	61	60
Pathogens						
E.coli	1	MPN/100mL	97	74	270	410
Thermotolerant Coliforms	1	cfu/100mL	420	570	300	410

Client Sample ID			QC149	QC150
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-JI11849	M16-JI11850
Date Sampled			Jul 14, 2016	Jul 14, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 15, 2016	28 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 15, 2016	28 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 15, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Jul 15, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Jul 15, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 15, 2016	180 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 15, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 15, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 15, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jul 15, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 15, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jul 18, 2016	2 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 15, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Jul 15, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 15, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 15, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jul 15, 2016	24 Hour
Thermotolerant Coliforms - Method: 6607: Microbes by Membrane Filtration AS/NZS 4276.7:2007	Melbourne	Jul 15, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	106			70-130	Pass		
Phosphate total (as P)	%	102			70-130	Pass		
Phosphorus reactive (as P)	%	109			70-130	Pass		
Sulphate (as S)	%	102			70-130	Pass		
Total Dissolved Solids	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO3)	%	110			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate & Nitrite (as N)	%	103			70-130	Pass		
Nitrate (as N)	%	103			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	118			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	95			80-120	Pass		
Aluminium (filtered)	%	95			80-120	Pass		
Arsenic	%	82			80-120	Pass		
Arsenic (filtered)	%	82			80-120	Pass		
Cadmium	%	99			70-130	Pass		
Cadmium (filtered)	%	102			70-130	Pass		
Chromium	%	85			80-120	Pass		
Chromium (filtered)	%	85			80-120	Pass		
Copper	%	84			80-120	Pass		
Copper (filtered)	%	84			80-120	Pass		
Iron	%	81			80-120	Pass		
Iron (filtered)	%	81			80-120	Pass		
Lead	%	84			80-120	Pass		
Lead (filtered)	%	84			80-120	Pass		
Manganese	%	83			80-120	Pass		
Manganese (filtered)	%	83			80-120	Pass		
Mercury	%	87			75-125	Pass		
Mercury (filtered)	%	87			70-130	Pass		
Nickel	%	84			80-120	Pass		
Nickel (filtered)	%	84			80-120	Pass		
Selenium	%	84			80-120	Pass		
Selenium (filtered)	%	84			80-120	Pass		
Zinc	%	83			80-120	Pass		
Zinc (filtered)	%	83			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	88			70-130	Pass		
Magnesium	%	96			70-130	Pass		
Potassium	%	89			70-130	Pass		
Sodium	%	90			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-J110923	NCP	%	107		70-130	Pass	
Sulphate (as S)	M16-J110773	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)	B16-JI11199	NCP	%	117		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	Z16-JI10927	NCP	%	83		75-125	Pass	
Arsenic (filtered)	Z16-JI10930	NCP	%	89		70-130	Pass	
Cadmium	S16-JI11143	NCP	%	110		70-130	Pass	
Chromium	Z16-JI10927	NCP	%	84		75-125	Pass	
Chromium (filtered)	Z16-JI10930	NCP	%	91		70-130	Pass	
Copper	Z16-JI10927	NCP	%	80		75-125	Pass	
Copper (filtered)	Z16-JI10930	NCP	%	87		70-130	Pass	
Iron	M16-JI14673	NCP	%	95		75-125	Pass	
Iron (filtered)	M16-JI12031	NCP	%	86		70-130	Pass	
Lead	Z16-JI10927	NCP	%	82		75-125	Pass	
Lead (filtered)	Z16-JI10930	NCP	%	88		70-130	Pass	
Manganese	M16-JI14673	NCP	%	94		75-125	Pass	
Manganese (filtered)	Z16-JI10930	NCP	%	86		70-130	Pass	
Mercury	Z16-JI10927	NCP	%	85		70-130	Pass	
Mercury (filtered)	Z16-JI10930	NCP	%	86		70-130	Pass	
Nickel	Z16-JI10927	NCP	%	81		75-125	Pass	
Nickel (filtered)	Z16-JI10930	NCP	%	87		70-130	Pass	
Selenium	Z16-JI10927	NCP	%	83		75-125	Pass	
Selenium (filtered)	Z16-JI10930	NCP	%	95		70-130	Pass	
Zinc	M16-JI14673	NCP	%	96		75-125	Pass	
Zinc (filtered)	M16-JI12031	NCP	%	85		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-JI11834	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI11834	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-JI11834	CP	%	90		70-130	Pass	
Nitrite (as N)	M16-JI11834	CP	%	100		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-JI11840	CP	%	90		70-130	Pass	
Magnesium	M16-JI11840	CP	%	93		70-130	Pass	
Potassium	M16-JI11840	CP	%	91		70-130	Pass	
Sodium	M16-JI11840	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-JI11842	CP	%	103		70-130	Pass	
Phosphorus reactive (as P)	M16-JI11842	CP	%	110		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-JI11844	CP	%	71		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-JI11844	CP	%	81		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-JI11844	CP	%	123		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-JI11844	CP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI11844	CP	%	97		70-130	Pass	
Nitrate (as N)	M16-JI11844	CP	%	96		70-130	Pass	
Nitrite (as N)	M16-JI11844	CP	%	100		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-JI11833	CP	uS/cm	470	460	2.0	30%	Pass	
pH	M16-JI11833	CP	pH Units	6.5	6.6	pass	30%	Pass	
Phosphate total (as P)	M16-JI11833	CP	mg/L	1.1	1.1	1.0	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-JI11833	CP	mg/L	47	39	18	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-JI11833	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-JI11833	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-JI11833	CP	mg/L	47	39	18	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-JI11833	CP	mg/L	1.7	1.7	1.1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M16-JI11833	CP	mg/L	0.25	0.23	10	30%	Pass	
Arsenic	Z16-JI10927	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	Z16-JI10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-JI11930	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	Z16-JI10927	NCP	mg/L	0.004	0.005	14	30%	Pass	
Chromium (filtered)	Z16-JI10930	NCP	mg/L	0.003	0.003	7.0	30%	Pass	
Copper	Z16-JI10927	NCP	mg/L	0.015	0.016	4.0	30%	Pass	
Copper (filtered)	Z16-JI10930	NCP	mg/L	0.009	0.010	5.0	30%	Pass	
Iron	Z16-JI10927	NCP	mg/L	0.38	0.40	5.0	30%	Pass	
Iron (filtered)	Z16-JI10930	NCP	mg/L	0.15	0.15	2.0	30%	Pass	
Lead	Z16-JI10927	NCP	mg/L	0.005	0.005	9.0	30%	Pass	
Lead (filtered)	Z16-JI10930	NCP	mg/L	0.003	0.003	6.0	30%	Pass	
Manganese	Z16-JI10927	NCP	mg/L	0.031	0.033	9.0	30%	Pass	
Manganese (filtered)	Z16-JI10930	NCP	mg/L	0.020	0.021	4.0	30%	Pass	
Mercury	Z16-JI10927	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	Z16-JI10930	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	Z16-JI10927	NCP	mg/L	0.002	0.002	3.0	30%	Pass	
Nickel (filtered)	Z16-JI10930	NCP	mg/L	0.002	0.002	<1	30%	Pass	
Selenium	Z16-JI10927	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	Z16-JI10930	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	Z16-JI10927	NCP	mg/L	0.35	0.38	7.0	30%	Pass	
Zinc (filtered)	Z16-JI10930	NCP	mg/L	0.25	0.26	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-JI11834	CP	mg/L	0.14	0.16	13	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-JI11834	CP	mg/L	0.64	0.64	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-JI11834	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-JI11834	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-JI11834	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-JI11835	CP	mg/L	0.21	0.25	16	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-JI11837	CP	mg/L	400	430	7.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-JI11838	CP	mg/L	520	590	12	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-JI11839	CP	mg/L	65	63	2.6	30%	Pass
Conductivity (at 25°C)	M16-JI11839	CP	uS/cm	360	360	1.0	30%	Pass
pH	M16-JI11839	CP	pH Units	6.6	6.6	pass	30%	Pass
Sulphate (as S)	M16-JI11839	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI11839	CP	mg/L	72	72	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI11839	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI11839	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI11839	CP	mg/L	72	72	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI11840	CP	mg/L	13	12	1.0	30%	Pass
Magnesium	M16-JI11840	CP	mg/L	11	11	1.0	30%	Pass
Potassium	M16-JI11840	CP	mg/L	13	14	3.0	30%	Pass
Sodium	M16-JI11840	CP	mg/L	120	120	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-JI11841	CP	mg/L	85	90	5.3	30%	Pass
Sulphate (as S)	M16-JI11841	CP	mg/L	17	17	2.0	30%	Pass
Total Dissolved Solids	M16-JI11841	CP	mg/L	470	500	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-JI11842	CP	mg/L	0.12	0.11	14	30%	Pass
Phosphorus reactive (as P)	M16-JI11842	CP	mg/L	0.06	0.05	7.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-JI11842	CP	mg/L	< 0.2	0.2	1.4	30%	Pass
Duplicate				Result 1	Result 2	RPD		
pH	M16-JI11843	CP	pH Units	5.0	4.9	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Carbonate Alkalinity (as CaCO ₃)	M16-JI11843	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI11843	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-JI11843	CP	mg/L	2.9	3.0	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-JI11844	CP	mg/L	1.4	1.7	<1	30%	Pass
Turbidity	M16-JI11844	CP	NTU	1.9	2.2	18	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI11844	CP	mg/L	0.07	0.06	7.0	30%	Pass
Nitrate & Nitrite (as N)	M16-JI11844	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-JI11844	CP	mg/L	0.05	0.05	6.0	30%	Pass
Nitrite (as N)	M16-JI11844	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-JI11845	CP	mg/L	0.32	0.25	25	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING - JULY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 15, 2016**
Eurofins | mgt reference: **508202**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

SAMPLE DATE 15/7 AS PER BOTTLES

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jul 15, 2016 12:00 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 508202	Due: Jul 25, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING - JULY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										X	X																													
Brisbane Laboratory - NATA Site # 20794																																								
External Laboratory																																								
11	MW12	Jul 15, 2016		Water	M16-JI12658	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW11	Jul 15, 2016		Water	M16-JI12659	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	QC153	Jul 15, 2016		Water	M16-JI12660	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	QC151	Jul 15, 2016		Water	M16-JI12661			X	X	X				X			X		X		X		X		X											X				
15	QC152	Jul 15, 2016		Water	M16-JI12662			X	X	X				X			X		X		X		X		X												X			
Test Counts					13	13	15	13	15	13	15	13	13	15	13	13	15	13	13	15	13	15	13	15	13	15	13	13	13	13	13	15	13	13	13	15	13	13	13	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **508202-W**
 Project name **NL_BASELINE GW_SW MONITORING - JULY**
 Project ID **ENAUPERT04483AA**
 Received Date **Jul 15, 2016**

Client Sample ID			MW22	MW21	MW20	MW19
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI12648	M16-JI12649	M16-JI12650	M16-JI12651
Date Sampled			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	160	97	63	220
Chloride	1	mg/L	88	82	81	92
Conductivity (at 25°C)	1	uS/cm	710	490	390	460
pH	0.1	pH Units	3.5	4.2	4.2	3.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.18
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	56	27	14	16
Total Dissolved Solids	10	mg/L	380	280	180	220
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.12	0.06	0.16
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.1	0.16	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	1.1	0.16	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	1.2	0.3	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	1.3	0.4	1.5
Total Nitrogen (as N)	0.2	mg/L	0.7	2.4	0.6	1.5
Heavy Metals						
Aluminium	0.05	mg/L	12	8.4	16	240
Aluminium (filtered)	0.05	mg/L	11	6.2	7.8	9.6
Arsenic	0.001	mg/L	0.002	< 0.001	0.003	0.019
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.003	0.008	0.30
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.002
Copper	0.001	mg/L	0.003	< 0.001	0.002	0.071
Copper (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.002
Iron	0.05	mg/L	40	16	1.9	3.1
Iron (filtered)	0.05	mg/L	33	10	0.88	0.23
Lead	0.001	mg/L	0.007	0.001	0.011	0.42

Client Sample ID			MW22 Water	MW21 Water	MW20 Water	MW19 Water
Sample Matrix			M16-JI12648	M16-JI12649	M16-JI12650	M16-JI12651
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	0.007	0.001	0.006	< 0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.020
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.012
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0037
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0002
Nickel	0.001	mg/L	0.025	0.005	0.008	0.077
Nickel (filtered)	0.001	mg/L	0.025	0.005	0.008	0.008
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.039
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.002
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.048
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.001	0.020
Alkali Metals						
Calcium	0.5	mg/L	9.1	4.2	< 0.5	5.1
Magnesium	0.5	mg/L	6.7	5.9	3.6	2.5
Potassium	0.5	mg/L	1.5	1.7	< 0.5	< 0.5
Sodium	0.5	mg/L	46	42	42	48

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW15 Water
Sample Matrix			M16-JI12652	M16-JI12653	M16-JI12654	M16-JI12655
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	38	48	50	25
Chloride	1	mg/L	69	91	67	46
Conductivity (at 25°C)	1	uS/cm	340	430	350	320
pH	0.1	pH Units	4.2	3.9	4.3	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	15	12	20
Total Dissolved Solids	10	mg/L	190	230	210	190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	<20	< 20	<20	<20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.10	0.07	0.03	0.20
Nitrate & Nitrite (as N)	0.05	mg/L	0.20	0.07	4.3	0.09
Nitrate (as N)	0.02	mg/L	0.19	0.07	4.3	0.09
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	< 0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	0.6	0.5	4.3	0.4

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW15 Water
Sample Matrix			M16-JI12652	M16-JI12653	M16-JI12654	M16-JI12655
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	24	4.9	8.4	0.75
Aluminium (filtered)	0.05	mg/L	0.97	3.8	5.6	0.46
Arsenic	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00006	< 0.00005
Chromium	0.001	mg/L	0.024	0.006	0.007	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.7	4.8	1.6	9.1
Iron (filtered)	0.05	mg/L	4.7	0.89	0.39	0.67
Lead	0.001	mg/L	0.037	0.009	0.020	0.002
Lead (filtered)	0.001	mg/L	0.002	0.003	0.008	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.008	0.002	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.001	0.002
Alkali Metals						
Calcium	0.5	mg/L	5.5	5.8	7.3	5.6
Magnesium	0.5	mg/L	4.6	8.8	5.7	9.5
Potassium	0.5	mg/L	1.1	1.2	0.7	1.7
Sodium	0.5	mg/L	34	41	34	28

Client Sample ID			MW14 Water	MW13 Water	MW12 Water	MW11 Water
Sample Matrix			M16-JI12656	M16-JI12657	M16-JI12658	M16-JI12659
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	34	34	55	55
Chloride	1	mg/L	53	51	62	130
Conductivity (at 25°C)	1	uS/cm	290	300	390	780
pH	0.1	pH Units	4.3	3.9	3.9	4.1
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	15	22	53
Total Dissolved Solids	10	mg/L	470	140	200	450
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	<20	<20	20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20

Client Sample ID			MW14 Water	MW13 Water	MW12 Water	MW11 Water
Sample Matrix			M16-JI12656	M16-JI12657	M16-JI12658	M16-JI12659
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.08	0.04	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	2.1	0.06	< 0.05	0.13
Nitrate (as N)	0.02	mg/L	2.1	0.06	0.03	0.12
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.3	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.4	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	2.4	0.5	0.3	0.5
Heavy Metals						
Aluminium	0.05	mg/L	28	3.8	5.5	8.2
Aluminium (filtered)	0.05	mg/L	0.70	1.9	5.5	6.1
Arsenic	0.001	mg/L	0.005	0.002	0.003	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.030	0.004	0.001	0.004
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	11	9.2	4.9	6.6
Iron (filtered)	0.05	mg/L	0.47	1.2	1.7	2.3
Lead	0.001	mg/L	0.030	0.003	< 0.001	0.009
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.005
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.006	0.007
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	0.006	0.006
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	10	4.1	1.0	1.6
Magnesium	0.5	mg/L	6.2	4.7	7.9	26
Potassium	0.5	mg/L	0.8	1.1	0.7	< 0.5
Sodium	0.5	mg/L	26	28	34	77

Client Sample ID			QC153 Water	QC151 Water	QC152 Water
Sample Matrix			M16-JI12660	M16-JI12661	M16-JI12662
Eurofins mgt Sample No.			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	38	-	-
Chloride	1	mg/L	73	-	-
Conductivity (at 25°C)	1	uS/cm	330	-	-
pH	0.1	pH Units	4.3	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	12	-	-
Total Dissolved Solids	10	mg/L	240	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.10	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.18	-	-
Nitrate (as N)	0.02	mg/L	0.18	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.3	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Nitrogen (as N)	0.2	mg/L	0.6	-	-
Heavy Metals					
Aluminium	0.05	mg/L	17	-	-
Aluminium (filtered)	0.05	mg/L	0.92	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.018	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.6	-	-
Iron (filtered)	0.05	mg/L	4.6	< 0.05	< 0.05
Lead	0.001	mg/L	0.023	-	-
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	-	-
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001

Client Sample ID			QC153	QC151	QC152
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-JI12660	M16-JI12661	M16-JI12662
Date Sampled			Jul 15, 2016	Jul 15, 2016	Jul 15, 2016
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	5.7	-	-
Magnesium	0.5	mg/L	4.6	-	-
Potassium	0.5	mg/L	1.1	-	-
Sodium	0.5	mg/L	35	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jul 19, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 19, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 19, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 19, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 19, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jul 19, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 19, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 19, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 19, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jul 19, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 19, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jul 19, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jul 19, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 19, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 19, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 19, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING - JULY Project ID: ENAUPERT04483AA	Order No.: Report #: 508202 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Jul 15, 2016 12:00 AM Due: Jul 25, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Sydney Laboratory - NATA Site # 18217										X	X																															
Brisbane Laboratory - NATA Site # 20794																																										
External Laboratory																																										
11	MW12	Jul 15, 2016		Water	M16-JI12658	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW11	Jul 15, 2016		Water	M16-JI12659	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	QC153	Jul 15, 2016		Water	M16-JI12660	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	QC151	Jul 15, 2016		Water	M16-JI12661			X	X	X	X		X			X		X		X		X		X		X					X						X					
15	QC152	Jul 15, 2016		Water	M16-JI12662			X	X	X	X		X			X		X		X		X		X		X					X							X				
Test Counts					13	13	15	13	15	13	15	13	13	15	13	13	15	13	13	15	13	15	13	15	13	15	13	13	13	13	13	15	13	13	13	13	15	13	13	13		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	107			70-130	Pass		
Chloride	%	109			70-130	Pass		
Phosphate total (as P)	%	115			70-130	Pass		
Phosphorus reactive (as P)	%	109			70-130	Pass		
Sulphate (as S)	%	105			70-130	Pass		
Total Dissolved Solids	%	95			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	%	108			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	93			70-130	Pass		
Nitrate & Nitrite (as N)	%	101			70-130	Pass		
Nitrate (as N)	%	101			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	117			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	95			80-120	Pass		
Aluminium (filtered)	%	95			80-120	Pass		
Arsenic	%	88			80-120	Pass		
Arsenic (filtered)	%	88			80-120	Pass		
Cadmium	%	92			70-130	Pass		
Cadmium (filtered)	%	92			70-130	Pass		
Chromium	%	93			80-120	Pass		
Chromium (filtered)	%	93			80-120	Pass		
Copper	%	90			80-120	Pass		
Copper (filtered)	%	90			80-120	Pass		
Iron	%	88			80-120	Pass		
Iron (filtered)	%	88			80-120	Pass		
Lead	%	89			80-120	Pass		
Lead (filtered)	%	89			80-120	Pass		
Manganese	%	91			80-120	Pass		
Manganese (filtered)	%	91			80-120	Pass		
Mercury	%	90			75-125	Pass		
Mercury (filtered)	%	90			70-130	Pass		
Nickel	%	89			80-120	Pass		
Nickel (filtered)	%	89			80-120	Pass		
Selenium	%	92			80-120	Pass		
Selenium (filtered)	%	92			80-120	Pass		
Zinc	%	89			80-120	Pass		
Zinc (filtered)	%	89			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	86			70-130	Pass		
Magnesium	%	91			70-130	Pass		
Potassium	%	82			70-130	Pass		
Sodium	%	83			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-J112648	CP	%	108		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Ammonia (as N)	M16-JI13920	NCP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI13920	NCP	%	103		70-130	Pass	
Nitrate (as N)	M16-JI13920	NCP	%	103		70-130	Pass	
Nitrite (as N)	M16-JI13920	NCP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-JI10916	NCP	%	114		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic (filtered)	M16-JI16908	NCP	%	95		70-130	Pass	
Cadmium	S16-JI15094	NCP	%	98		70-130	Pass	
Cadmium (filtered)	S16-JI16532	NCP	%	94		70-130	Pass	
Chromium (filtered)	M16-JI16908	NCP	%	94		70-130	Pass	
Copper (filtered)	M16-JI16908	NCP	%	92		70-130	Pass	
Lead (filtered)	M16-JI16908	NCP	%	92		70-130	Pass	
Manganese (filtered)	M16-JI16908	NCP	%	94		70-130	Pass	
Mercury (filtered)	M16-JI16908	NCP	%	87		70-130	Pass	
Nickel (filtered)	M16-JI16908	NCP	%	92		70-130	Pass	
Selenium (filtered)	M16-JI16908	NCP	%	100		70-130	Pass	
Zinc (filtered)	M16-JI16908	NCP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-JI12649	CP	%	126		70-130	Pass	
Sulphate (as S)	M16-JI12649	CP	%	111		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron (filtered)	M16-JI16908	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	B16-JI16018	NCP	%	97		75-125	Pass	
Chromium	B16-JI16018	NCP	%	100		75-125	Pass	
Copper	B16-JI16018	NCP	%	98		75-125	Pass	
Iron	B16-JI16018	NCP	%	104		75-125	Pass	
Lead	B16-JI16018	NCP	%	98		75-125	Pass	
Manganese	B16-JI16018	NCP	%	100		75-125	Pass	
Mercury	B16-JI16018	NCP	%	105		70-130	Pass	
Nickel	B16-JI16018	NCP	%	99		75-125	Pass	
Selenium	B16-JI16018	NCP	%	106		75-125	Pass	
Zinc	B16-JI16018	NCP	%	97		75-125	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-JI12655	CP	%	91		70-130	Pass	
Magnesium	M16-JI12655	CP	%	97		70-130	Pass	
Potassium	M16-JI12655	CP	%	98		70-130	Pass	
Sodium	M16-JI12655	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-JI12659	CP	%	109		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-JI12659	CP	%	76		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-JI12659	CP	%	119		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-JI12648	CP	mg/L	88	87	1.4	30%	Pass	
pH	M16-JI12648	CP	pH Units	3.5	3.5	pass	30%	Pass	
Phosphate total (as P)	M16-JI12648	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-JI12648	CP	mg/L	56	57	<1	30%	Pass	
Total Dissolved Solids	M16-JI12648	CP	mg/L	380	370	3.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-JI12648	CP	mg/L	< 20	< 20	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-JI12648	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-JI13920	NCP	mg/L	0.03	0.03	9.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-JI13920	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-JI13920	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-JI13920	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-JI12648	CP	mg/L	0.7	0.6	18	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-JI11833	NCP	mg/L	0.25	0.23	10	30%	Pass	
Aluminium (filtered)	M16-JI11835	NCP	mg/L	0.21	0.25	16	30%	Pass	
Arsenic (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-JI15093	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-JI16531	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-JI13861	NCP	mg/L	3.9	4.3	10	30%	Pass	
Lead (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-JI16908	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M16-JI16908	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-JI16908	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-JI16908	NCP	mg/L	0.004	0.003	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-JI12649	CP	mg/L	82	86	5.6	30%	Pass	
Phosphorus reactive (as P)	M16-JI12649	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-JI12649	CP	mg/L	27	28	2.4	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	B16-JI16018	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium	B16-JI16018	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B16-JI16018	NCP	mg/L	0.002	0.002	3.0	30%	Pass	
Iron	B16-JI16018	NCP	mg/L	0.09	0.10	9.0	30%	Pass	
Lead	B16-JI16018	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	B16-JI16018	NCP	mg/L	0.009	0.009	1.0	30%	Pass	
Mercury	B16-JI16018	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	B16-JI16018	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	B16-JI16018	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	B16-JI16018	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI12655	CP	mg/L	5.6	5.7	1.0	30%	Pass
Magnesium	M16-JI12655	CP	mg/L	9.5	9.7	2.0	30%	Pass
Potassium	M16-JI12655	CP	mg/L	1.7	1.8	2.0	30%	Pass
Sodium	M16-JI12655	CP	mg/L	28	29	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-JI12656	CP	mg/L	470	430	8.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Hydroxide Alkalinity (as CaCO ₃)	M16-JI12658	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI12658	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI12659	CP	mg/L	55	54	2.0	30%	Pass
Chloride	M16-JI12659	CP	mg/L	130	130	3.4	30%	Pass
Phosphate total (as P)	M16-JI12659	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus reactive (as P)	M16-JI12659	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-JI12659	CP	mg/L	53	54	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-JI12659	CP	mg/L	0.4	0.4	3.8	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 18, 2016**
Eurofins | mgt reference: **508370**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

COC HAS QC SAMPLES CALLED QC154 AND QC155, WHEREAS CONTAINERS ARE LABELLED QC153 AND QC154. PLEASE ADVISE IF COC IS INCORRECT. FILTERED METALS CONTAINERS NOT PROVIDED

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **508370-W**
 Project name NL_BASELINE GW_SW MONITORING
 Project ID ENAUPERT04483AA
 Received Date Jul 18, 2016

Client Sample ID			MW10 Water	MW9 Water	MW8 Water	MW7 Water
Sample Matrix			M16-JI14026	M16-JI14027	M16-JI14028	M16-JI14029
Eurofins mgt Sample No.			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	47	23	11	28
Chloride	1	mg/L	25	20	14	20
Conductivity (at 25°C)	1	uS/cm	230	120	99	140
pH	0.1	pH Units	5.9	4.7	5.9	4.5
Phosphate total (as P)	0.05	mg/L	0.14	0.10	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	10.0	< 5	< 5	7.1
Total Dissolved Solids	10	mg/L	190	92	67	85
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	54.04	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	<10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	54	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.65	0.10	0.02	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	3.0	1.00	3.4	1.5
Nitrate (as N)	0.02	mg/L	3.0	1.00	3.3	1.5
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	0.6	0.4	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	0.7	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	4.5	1.7	3.8	1.9
Heavy Metals						
Aluminium	0.05	mg/L	24	3.4	2.4	4.2
Aluminium (filtered)	0.05	mg/L	0.42	0.52	0.28	0.50
Arsenic	0.001	mg/L	0.006	0.001	< 0.001	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.034	0.005	0.004	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.008	0.001	0.002	0.002
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	24	1.8	0.09	6.6
Iron (filtered)	0.05	mg/L	1.7	0.53	< 0.05	0.54
Lead	0.001	mg/L	0.018	0.002	0.002	0.006

Client Sample ID			MW10 Water	MW9 Water	MW8 Water	MW7 Water
Sample Matrix			M16-JI14026	M16-JI14027	M16-JI14028	M16-JI14029
Eurofins mgt Sample No.			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.011	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.007	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	0.002	< 0.001	0.004
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.032	0.006	0.007	0.005
Zinc (filtered)	0.001	mg/L	0.009	0.005	0.005	0.004
Alkali Metals						
Calcium	0.5	mg/L	25	6.2	8.9	7.6
Magnesium	0.5	mg/L	3.7	1.6	1.2	2.1
Potassium	0.5	mg/L	1.8	0.7	< 0.5	1.8
Sodium	0.5	mg/L	14	10	7.8	11

Client Sample ID			MW6 Water	MW5 Water	SWL20-1 Water	SWL20-2 Water
Sample Matrix			M16-JI14030	M16-JI14031	M16-JI14032	M16-JI14033
Eurofins mgt Sample No.			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	45	42	11	< 10
Chloride	1	mg/L	30	37	890	850
Conductivity (at 25°C)	1	uS/cm	280	210	3000	3100
pH	0.1	pH Units	5.8	5.1	6.6	6.6
Phosphate total (as P)	0.05	mg/L	0.07	0.09	0.07	0.14
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	17	< 5	25	25
Total Dissolved Solids	10	mg/L	180	250	1800	1800
Turbidity	1	NTU	-	-	3.2	3.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	24	25
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	24	25
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.33	0.15	0.04	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	1.8	1.1	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	1.8	1.0	0.03	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.05	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	1.6	1.6	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	1.8	1.6	1.1
Total Nitrogen (as N)	0.2	mg/L	2.9	2.9	1.6	1.1

Client Sample ID			MW6 Water	MW5 Water	SWL20-1 Water	SWL20-2 Water
Sample Matrix			M16-JI14030	M16-JI14031	M16-JI14032	M16-JI14033
Eurofins mgt Sample No.			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.9	5.0	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.43	2.0	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.004	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.006	0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	0.004	< 0.001	< 0.001
Iron	0.05	mg/L	0.28	0.44	1.6	1.7
Iron (filtered)	0.05	mg/L	0.15	0.29	1.2	1.2
Lead	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.008	0.008
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.012	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.006	0.010	0.002	0.002
Alkali Metals						
Calcium	0.5	mg/L	13	3.1	8.0	8.4
Magnesium	0.5	mg/L	7.4	3.1	46	49
Potassium	0.5	mg/L	6.3	9.1	10	12
Sodium	0.5	mg/L	26	28	450	480
Pathogens						
E.coli	1	MPN/100mL	-	-	1400	420
Thermotolerant Coliforms	1	MPN/100mL	-	-	2800	910

Client Sample ID			SWL20-3 Water	SWL1-1 Water	SWL1-2 Water	SWL1-3 Water
Sample Matrix			M16-JI14034	M16-JI14035	M16-JI14036	M16-JI14037
Eurofins mgt Sample No.			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	11	< 10	< 10	< 10
Chloride	1	mg/L	800	20	20	21
Conductivity (at 25°C)	1	uS/cm	3000	120	130	140
pH	0.1	pH Units	6.7	6.8	6.9	6.9
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	25	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	1800	60	63	69
Turbidity	1	NTU	3.0	2.8	2.9	3.3

Client Sample ID			SWL20-3	SWL1-1	SWL1-2	SWL1-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI14034	M16-JI14035	M16-JI14036	M16-JI14037
Date Sampled			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	22	22
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	22	22
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	< 0.01	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.06	0.08
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	0.06	0.08
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	0.3	0.6	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	0.3	0.6	0.2
Total Nitrogen (as N)	0.2	mg/L	1.1	0.3	0.66	0.28
Heavy Metals						
Aluminium	0.05	mg/L	0.11	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.003	0.003	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Iron	0.05	mg/L	1.7	0.13	0.17	0.16
Iron (filtered)	0.05	mg/L	1.3	< 0.05	0.05	0.05
Lead	0.001	mg/L	< 0.001	0.001	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.005	0.006	0.007
Manganese (filtered)	0.005	mg/L	0.007	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.055	0.057	0.051
Zinc (filtered)	0.001	mg/L	0.003	0.044	0.039	0.034
Alkali Metals						
Calcium	0.5	mg/L	7.8	5.8	7.1	7.2
Magnesium	0.5	mg/L	45	2.0	2.3	2.5
Potassium	0.5	mg/L	11	1.4	1.6	1.6
Sodium	0.5	mg/L	440	13	13	14
Pathogens						
E.coli	1	MPN/100mL	480	7	44	44
Thermotolerant Coliforms	1	MPN/100mL	2700	2400	>2400	>2400

Client Sample ID			SWL5-1	QC154	QC155
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-JI14038	M16-JI14039	M16-JI14040
Date Sampled			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	< 10	-	-
Chloride	1	mg/L	26	-	-
Conductivity (at 25°C)	1	uS/cm	160	-	-
pH	0.1	pH Units	6.1	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	7.2	-	-
Total Dissolved Solids	10	mg/L	120	-	-
Turbidity	1	NTU	1.6	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.01	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Nitrogen (as N)	0.2	mg/L	0.4	-	-
Heavy Metals					
Aluminium	0.05	mg/L	0.53	-	-
Aluminium (filtered)	0.05	mg/L	0.50	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.08	-	-
Iron (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	-	-
Zinc (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001

Client Sample ID			SWL5-1	QC154	QC155
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-JI14038	M16-JI14039	M16-JI14040
Date Sampled			Jul 18, 2016	Jul 18, 2016	Jul 18, 2016
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	7.9	-	-
Magnesium	0.5	mg/L	3.1	-	-
Potassium	0.5	mg/L	< 0.5	-	-
Sodium	0.5	mg/L	15	-	-
Pathogens					
E.coli	1	MPN/100mL	>2400	-	-
Thermotolerant Coliforms	1	MPN/100mL	>2400	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jul 19, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 19, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 19, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 19, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 19, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jul 19, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 19, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 19, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jul 20, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 19, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jul 19, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jul 19, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jul 19, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 19, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 25, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 19, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 19, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jul 19, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jul 19, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 19, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 19, 2016	7 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	107			70-130	Pass	
Chloride	%	102			70-130	Pass	
Phosphate total (as P)	%	120			70-130	Pass	
Phosphorus reactive (as P)	%	109			70-130	Pass	
Sulphate (as S)	%	105			70-130	Pass	
Total Dissolved Solids	%	91			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO ₃)	%	116			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	%	101			70-130	Pass	
Nitrate (as N)	%	101			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	112			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	95			80-120	Pass	
Aluminium (filtered)	%	82			80-120	Pass	
Arsenic	%	88			80-120	Pass	
Arsenic (filtered)	%	88			80-120	Pass	
Cadmium	%	100			70-130	Pass	
Cadmium (filtered)	%	98			70-130	Pass	
Chromium	%	81			80-120	Pass	
Chromium (filtered)	%	81			80-120	Pass	
Copper	%	80			80-120	Pass	
Copper (filtered)	%	80			80-120	Pass	
Iron	%	97			80-120	Pass	
Iron (filtered)	%	83			80-120	Pass	
Lead	%	90			80-120	Pass	
Lead (filtered)	%	90			80-120	Pass	
Manganese	%	81			80-120	Pass	
Manganese (filtered)	%	81			80-120	Pass	
Mercury	%	87			75-125	Pass	
Mercury (filtered)	%	87			70-130	Pass	
Nickel	%	80			80-120	Pass	
Nickel (filtered)	%	80			80-120	Pass	
Selenium	%	96			80-120	Pass	
Selenium (filtered)	%	96			80-120	Pass	
Zinc	%	90			80-120	Pass	
Zinc (filtered)	%	90			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	99			70-130	Pass	
Magnesium	%	111			70-130	Pass	
Potassium	%	96			70-130	Pass	
Sodium	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-JI12648	NCP	%	108		70-130	Pass	
Phosphorus reactive (as P)	M16-JI12629	NCP	%	73		70-130	Pass	
Sulphate (as S)	M16-JI12649	NCP	%	111		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO3)	M16-JI12031	NCP	%	73		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-JI13988	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI13988	NCP	%	96		70-130	Pass	
Nitrate (as N)	M16-JI13988	NCP	%	96		70-130	Pass	
Nitrite (as N)	M16-JI13988	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic (filtered)	B16-JI13837	NCP	%	82		70-130	Pass	
Cadmium	S16-JI15242	NCP	%	105		70-130	Pass	
Cadmium (filtered)	S16-JI16532	NCP	%	94		70-130	Pass	
Chromium (filtered)	B16-JI13837	NCP	%	88		70-130	Pass	
Copper (filtered)	B16-JI13837	NCP	%	81		70-130	Pass	
Iron (filtered)	M16-JI14007	NCP	%	87		70-130	Pass	
Lead (filtered)	B16-JI13837	NCP	%	83		70-130	Pass	
Manganese (filtered)	M16-JI14007	NCP	%	90		70-130	Pass	
Mercury (filtered)	M16-JI14007	NCP	%	80		70-130	Pass	
Nickel (filtered)	B16-JI13837	NCP	%	82		70-130	Pass	
Selenium (filtered)	B16-JI13837	NCP	%	99		70-130	Pass	
Zinc (filtered)	B16-JI13837	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-JI14026	CP	%	104		70-130	Pass	
Magnesium	M16-JI14026	CP	%	116		70-130	Pass	
Potassium	M16-JI14026	CP	%	96		70-130	Pass	
Sodium	M16-JI14026	CP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-JI14027	CP	%	121		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-JI12659	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-JI14027	CP	%	80		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-JI14036	CP	%	94		70-130	Pass	
Magnesium	M16-JI14036	CP	%	104		70-130	Pass	
Potassium	M16-JI14036	CP	%	91		70-130	Pass	
Sodium	M16-JI14036	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-JI14037	CP	%	122		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-JI14037	CP	%	81		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-JI12648	NCP	mg/L	88	87	1.4	30%	Pass	
Phosphate total (as P)	M16-JI14026	CP	mg/L	0.14	0.15	2.0	30%	Pass	
Phosphorus reactive (as P)	M16-JI12629	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-JI12649	NCP	mg/L	27	28	2.4	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-JI14026	CP	mg/L	1.5	1.6	2.2	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-JI11833	NCP	mg/L	0.25	0.23	10	30%	Pass	
Aluminium (filtered)	M16-JI13871	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	B16-JI13837	NCP	mg/L	0.098	0.098	1.0	30%	Pass	
Cadmium	S16-JI15241	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-JI16531	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	B16-JI13837	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-JI13837	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	B16-JI13837	NCP	mg/L	0.73	0.79	9.0	30%	Pass	
Lead (filtered)	B16-JI13837	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	B16-JI13837	NCP	mg/L	0.68	0.75	9.0	30%	Pass	
Mercury (filtered)	B16-JI13837	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	B16-JI13837	NCP	mg/L	0.007	0.007	8.0	30%	Pass	
Selenium (filtered)	B16-JI13837	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	B16-JI13837	NCP	mg/L	0.010	0.011	7.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-JI14026	CP	mg/L	25	26	2.0	30%	Pass	
Magnesium	M16-JI14026	CP	mg/L	3.7	3.8	2.0	30%	Pass	
Potassium	M16-JI14026	CP	mg/L	1.8	1.8	3.0	30%	Pass	
Sodium	M16-JI14026	CP	mg/L	14	14	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-JI14029	CP	uS/cm	140	140	<1	30%	Pass	
pH	M16-JI14029	CP	pH Units	4.5	4.5	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-JI14029	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-JI14029	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-JI14029	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-JI14029	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-JI14031	CP	mg/L	250	260	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-JI14032	CP	NTU	3.2	3.2	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M16-JI14033	CP	mg/L	< 10	< 10	<1	30%	Pass	
Conductivity (at 25°C)	M16-JI14033	CP	uS/cm	3100	3100	<1	30%	Pass	
pH	M16-JI14033	CP	pH Units	6.6	6.7	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI14033	CP	mg/L	25	23	9.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI14033	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI14033	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI14033	CP	mg/L	25	23	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI14034	CP	mg/L	11	< 10	26	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI14034	CP	mg/L	0.04	0.05	5.0	30%	Pass
Nitrate & Nitrite (as N)	M16-JI14034	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-JI14034	CP	mg/L	0.03	0.02	15	30%	Pass
Nitrite (as N)	M16-JI14034	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-JI14036	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-JI14036	CP	mg/L	0.6	0.6	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI14036	CP	mg/L	7.1	7.1	1.0	30%	Pass
Magnesium	M16-JI14036	CP	mg/L	2.3	2.4	3.0	30%	Pass
Potassium	M16-JI14036	CP	mg/L	1.6	1.5	5.0	30%	Pass
Sodium	M16-JI14036	CP	mg/L	13	13	3.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING JULY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 19, 2016**
Eurofins | mgt reference: **508513**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **508513-W**
 Project name **NL_BASELINE GW_SW MONITORING JULY**
 Project ID **ENAUPERT04483AA**
 Received Date **Jul 19, 2016**

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-JI15184	M16-JI15219	M16-JI15220	M16-JI15221
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	54	42	25	69
Chloride	1	mg/L	54	36	18	53
Conductivity (at 25°C)	1	uS/cm	280	230	100	330
pH	0.1	pH Units	4.4	4.0	4.5	5.1
Phosphate total (as P)	0.05	mg/L	0.21	0.14	0.07	0.17
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.8	8.6	< 5	12
Total Dissolved Solids	10	mg/L	^{Q19} 270	^{Q19} 210	^{Q19} 77	^{Q19} 230
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.33	0.46	0.02	0.23
Nitrate & Nitrite (as N)	0.05	mg/L	2.3	< 0.05	0.95	11
Nitrate (as N)	0.02	mg/L	2.3	< 0.02	0.94	11
Nitrite (as N)	0.02	mg/L	0.09	< 0.02	< 0.02	0.08
Organic Nitrogen (as N)	0.2	mg/L	2.6	1.0	< 0.2	1.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.9	1.5	< 0.2	1.9
Total Nitrogen (as N)	0.2	mg/L	5.2	1.5	1.0	13
Heavy Metals						
Aluminium	0.05	mg/L	1.0	0.91	1.4	28
Aluminium (filtered)	0.05	mg/L	0.50	0.74	0.44	0.35
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00006
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.002	0.004	0.030
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.002	0.004	0.018
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.31	1.3	0.32	1.7
Iron (filtered)	0.05	mg/L	0.13	0.98	0.08	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	0.001	0.022

Client Sample ID			MW28 Water	MW27 Water	MW26 Water	MW25 Water
Sample Matrix			M16-JI15184	M16-JI15219	M16-JI15220	M16-JI15221
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.005	< 0.005	0.026
Manganese (filtered)	0.005	mg/L	< 0.005	0.005	< 0.005	0.012
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0006
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	0.012
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	0.004
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.007	0.009	0.056
Zinc (filtered)	0.001	mg/L	0.002	0.006	0.006	0.015
Alkali Metals						
Calcium	0.5	mg/L	3.4	3.2	2.0	9.4
Magnesium	0.5	mg/L	8.5	5.7	2.1	12
Potassium	0.5	mg/L	3.9	3.7	2.3	4.5
Sodium	0.5	mg/L	35	19	12	29

Client Sample ID			MW24 Water	MW23 Water	MW4 Water	MW3 Water
Sample Matrix			M16-JI15222	M16-JI15223	M16-JI15224	M16-JI15225
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	56	23	27	48
Chloride	1	mg/L	150	61	21	28
Conductivity (at 25°C)	1	uS/cm	590	350	210	320
pH	0.1	pH Units	4.4	5.8	6.5	6.5
Phosphate total (as P)	0.05	mg/L	0.13	< 0.05	0.10	0.25
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	18	12	5.0	11
Total Dissolved Solids	10	mg/L	^{Q19} 410	^{Q19} 280	^{Q19} 150	^{Q19} 260
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	53	79
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	53	79
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.26	< 0.01	0.12	0.55
Nitrate & Nitrite (as N)	0.05	mg/L	0.58	9.0	3.0	1.8
Nitrate (as N)	0.02	mg/L	0.56	9.0	3.0	1.8
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	0.8	1.0	3.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.8	1.1	3.6
Total Nitrogen (as N)	0.2	mg/L	1.9	9.8	4.1	5.4

Client Sample ID			MW24 Water	MW23 Water	MW4 Water	MW3 Water
Sample Matrix			M16-JI15222	M16-JI15223	M16-JI15224	M16-JI15225
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	5.0	3.9	0.12	0.94
Aluminium (filtered)	0.05	mg/L	1.2	0.29	< 0.05	0.65
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.003	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.85	0.29	< 0.05	0.05
Iron (filtered)	0.05	mg/L	0.46	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.005	0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	6.0	24	24	38
Magnesium	0.5	mg/L	14	4.3	2.2	5.8
Potassium	0.5	mg/L	1.4	5.0	< 0.5	1.8
Sodium	0.5	mg/L	86	31	10	14

Client Sample ID			MW2 Water	MW1 Water	MW55 Water	SWL4-1 Water
Sample Matrix			M16-JI15226	M16-JI15227	M16-JI15228	M16-JI15229
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	-
BTEX						
Benzene	0.001	mg/L	-	-	0.004	-
Toluene	0.001	mg/L	-	-	< 0.001	-
Ethylbenzene	0.001	mg/L	-	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	-
o-Xylene	0.001	mg/L	-	-	< 0.001	-
Xylenes - Total	0.003	mg/L	-	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	-	75	-

Client Sample ID			MW2 Water	MW1 Water	MW55 Water	SWL4-1 Water
Sample Matrix			M16-JI15226	M16-JI15227	M16-JI15228	M16-JI15229
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	-
Organochlorine Pesticides						
Chlordanes - Total	0.0001	mg/L	-	-	< 0.0005	-
4,4'-DDD	0.00001	mg/L	-	-	< 0.00005	-
4,4'-DDE	0.00001	mg/L	-	-	< 0.00005	-
4,4'-DDT	0.00001	mg/L	-	-	< 0.00005	-
a-BHC	0.00001	mg/L	-	-	< 0.00005	-
Aldrin	0.00001	mg/L	-	-	< 0.00005	-
b-BHC	0.00001	mg/L	-	-	< 0.00005	-
d-BHC	0.00001	mg/L	-	-	< 0.00005	-
Dieldrin	0.00001	mg/L	-	-	< 0.00005	-
Endosulfan I	0.00001	mg/L	-	-	< 0.00005	-
Endosulfan II	0.00001	mg/L	-	-	< 0.00005	-
Endosulfan sulphate	0.00001	mg/L	-	-	< 0.00005	-
Endrin	0.00001	mg/L	-	-	< 0.00005	-
Endrin aldehyde	0.00001	mg/L	-	-	< 0.00005	-
Endrin ketone	0.00001	mg/L	-	-	< 0.00005	-
g-BHC (Lindane)	0.00001	mg/L	-	-	< 0.00005	-
Heptachlor	0.00001	mg/L	-	-	< 0.00005	-
Heptachlor epoxide	0.00001	mg/L	-	-	< 0.00005	-
Hexachlorobenzene	0.00001	mg/L	-	-	< 0.00005	-
Methoxychlor	0.00001	mg/L	-	-	< 0.00005	-
Toxaphene	0.0001	mg/L	-	-	< 0.0005	-
Dibutylchloroendate (surr.)	1	%	-	-	87	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	107	-
Organophosphorus Pesticides						
Azinphos-methyl	0.0002	mg/L	-	-	< 0.0005	-
Bolstar	0.0002	mg/L	-	-	< 0.0005	-
Chlorfenvinphos	0.002	mg/L	-	-	< 0.002	-
Chlorpyrifos	0.002	mg/L	-	-	< 0.002	-
Chlorpyrifos-methyl	0.0002	mg/L	-	-	< 0.0005	-
Coumaphos	0.0002	mg/L	-	-	< 0.0005	-
Demeton-S	0.002	mg/L	-	-	< 0.002	-
Demeton-O	0.0002	mg/L	-	-	< 0.0005	-
Diazinon	0.0002	mg/L	-	-	< 0.0005	-
Dichlorvos	0.0002	mg/L	-	-	< 0.0005	-
Dimethoate	0.0002	mg/L	-	-	< 0.0005	-
Disulfoton	0.0002	mg/L	-	-	< 0.0005	-
EPN	0.0002	mg/L	-	-	< 0.0005	-
Ethion	0.0002	mg/L	-	-	< 0.0005	-
Ethoprop	0.0002	mg/L	-	-	< 0.0005	-
Ethyl parathion	0.0002	mg/L	-	-	< 0.0005	-
Fenitrothion	0.0002	mg/L	-	-	< 0.0005	-
Fensulfothion	0.0002	mg/L	-	-	< 0.0005	-
Fenthion	0.0002	mg/L	-	-	< 0.0005	-
Malathion	0.0002	mg/L	-	-	< 0.0005	-

Client Sample ID			MW2 Water	MW1 Water	MW55 Water	SWL4-1 Water
Sample Matrix			M16-JI15226	M16-JI15227	M16-JI15228	M16-JI15229
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Merphos	0.0002	mg/L	-	-	< 0.0005	-
Methyl parathion	0.0002	mg/L	-	-	< 0.0005	-
Mevinphos	0.0002	mg/L	-	-	< 0.0005	-
Monocrotophos	0.0002	mg/L	-	-	< 0.0005	-
Naled	0.0002	mg/L	-	-	< 0.0005	-
Omethoate	0.0002	mg/L	-	-	< 0.0005	-
Phorate	0.0002	mg/L	-	-	< 0.0005	-
Pirimiphos-methyl	0.002	mg/L	-	-	< 0.002	-
Pyrazophos	0.0002	mg/L	-	-	< 0.0005	-
Ronnel	0.0002	mg/L	-	-	< 0.0005	-
Terbufos	0.0002	mg/L	-	-	< 0.0005	-
Tetrachlorvinphos	0.0002	mg/L	-	-	< 0.0005	-
Tokuthion	0.0002	mg/L	-	-	< 0.0005	-
Trichloronate	0.0002	mg/L	-	-	< 0.0005	-
Triphenylphosphate (surr.)	1	%	-	-	81	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Water Quality Parameters						
Acidity (as CaCO ₃)	10	mg/L	23	25	42	13
Chloride	1	mg/L	21	36	89	140
Conductivity (at 25°C)	1	uS/cm	280	290	660	640
pH	0.1	pH Units	6.7	6.5	6.5	6.4
Phosphate total (as P)	0.05	mg/L	< 0.05	0.08	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.4	10	35	25
Total Dissolved Solids	10	mg/L	180	190	410	370
Turbidity	1	NTU	-	-	-	6.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	71	50	77	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	71	50	77	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.07	0.05	0.53	0.19
Nitrate & Nitrite (as N)	0.05	mg/L	3.8	0.39	0.14	0.21
Nitrate (as N)	0.02	mg/L	3.8	0.38	0.11	0.21
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.6	0.8	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.7	1.3	0.6
Total Nitrogen (as N)	0.2	mg/L	4.1	1.1	1.4	0.8
Heavy Metals						
Aluminium	0.05	mg/L	1.9	2.7	0.37	0.36
Aluminium (filtered)	0.05	mg/L	0.06	0.14	0.25	0.20
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW2 Water	MW1 Water	MW55 Water	SWL4-1 Water
Sample Matrix			M16-JI15226	M16-JI15227	M16-JI15228	M16-JI15229
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium	0.001	mg/L	0.003	0.004	0.004	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.003	0.002	0.001	0.002
Copper (filtered)	0.001	mg/L	0.001	< 0.001	0.001	0.001
Iron	0.05	mg/L	0.33	0.40	0.44	1.1
Iron (filtered)	0.05	mg/L	0.07	0.09	0.14	0.43
Lead	0.001	mg/L	0.001	0.003	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	< 0.005	< 0.005	0.015
Manganese (filtered)	0.005	mg/L	0.015	< 0.005	< 0.005	0.014
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	< 0.005	< 0.005	0.027
Zinc (filtered)	0.001	mg/L	0.004	0.001	0.003	0.025
Alkali Metals						
Calcium	0.5	mg/L	28	17	36	20
Magnesium	0.5	mg/L	4.9	3.2	6.5	12
Potassium	0.5	mg/L	1.1	18	13	5.8
Sodium	0.5	mg/L	15	22	70	75
Pathogens						
E.coli	1	MPN/100mL	-	-	-	62
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	410

Client Sample ID			SWL4-2 Water	SWL4-3 Water	SWL3-1 Water	SWL3-2 Water
Sample Matrix			M16-JI15230	M16-JI15231	M16-JI15232	M16-JI15233
Eurofins mgt Sample No.			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	11	14	< 10	< 10
Chloride	1	mg/L	130	130	55	55
Conductivity (at 25°C)	1	uS/cm	650	630	320	320
pH	0.1	pH Units	6.6	6.5	7.3	7.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	25	24	6.5	6.5
Total Dissolved Solids	10	mg/L	350	390	180	190
Turbidity	1	NTU	3.8	3.7	2.9	2.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	52	50
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	52	50

Client Sample ID			SWL4-2	SWL4-3	SWL3-1	SWL3-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI15230	M16-JI15231	M16-JI15232	M16-JI15233
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.06	0.19	0.20
Nitrate & Nitrite (as N)	0.05	mg/L	0.22	0.20	0.18	0.12
Nitrate (as N)	0.02	mg/L	0.20	0.18	0.17	0.11
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.6	0.6
Total Nitrogen (as N)	0.2	mg/L	0.6	0.6	0.8	0.7
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.19	0.31	0.31
Aluminium (filtered)	0.05	mg/L	0.16	0.15	0.31	0.31
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.002	0.001
Copper (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	0.58	0.48	0.20	0.19
Iron (filtered)	0.05	mg/L	0.35	0.22	0.17	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.014	0.015	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.014	0.014	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.026	0.030	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.026	0.028	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	25	20	13	12
Magnesium	0.5	mg/L	15	13	7.4	7.5
Potassium	0.5	mg/L	6.2	4.7	1.6	1.6
Sodium	0.5	mg/L	86	64	34	35
Pathogens						
E.coli	1	MPN/100mL	37	44	12	13
Thermotolerant Coliforms	1	MPN/100mL	220	290	99	86

Client Sample ID			SWL3-3	SWL2-1	SWL2-2	SWL2-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI15234	M16-JI15235	M16-JI15236	M16-JI15237
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	56	59	56	60
Conductivity (at 25°C)	1	uS/cm	320	250	260	260
pH	0.1	pH Units	7.2	6.9	7.0	6.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	6.5	11	11	11
Total Dissolved Solids	10	mg/L	180	160	160	170
Turbidity	1	NTU	3.1	-	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	56	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	56	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.19	0.04	0.04	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.11	0.03	0.03	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.4	0.4	0.5
Total Nitrogen (as N)	0.2	mg/L	0.8	0.4	0.4	0.5
Heavy Metals						
Aluminium	0.05	mg/L	1.0	0.26	0.21	0.22
Aluminium (filtered)	0.05	mg/L	0.30	0.19	0.21	0.18
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	0.07	0.07	0.07
Iron (filtered)	0.05	mg/L	0.16	0.06	0.06	0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.004	0.003

Client Sample ID			SWL3-3	SWL2-1	SWL2-2	SWL2-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-JI15234	M16-JI15235	M16-JI15236	M16-JI15237
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	13	4.4	4.4	4.4
Magnesium	0.5	mg/L	7.4	7.0	7.2	7.2
Potassium	0.5	mg/L	1.7	1.8	1.9	1.8
Sodium	0.5	mg/L	35	37	38	38
Pathogens						
E.coli	1	MPN/100mL	16	-	-	-
Thermotolerant Coliforms	1	MPN/100mL	96	-	-	-

Client Sample ID			QC157	QC156	QC158
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-JI15238	M16-JI15239	M16-JI15240
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	22	-	-
Chloride	1	mg/L	34	-	-
Conductivity (at 25°C)	1	uS/cm	280	-	-
pH	0.1	pH Units	6.6	-	-
Phosphate total (as P)	0.05	mg/L	0.09	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	10	-	-
Total Dissolved Solids	10	mg/L	190	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	54	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.03	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.36	-	-
Nitrate (as N)	0.02	mg/L	0.34	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Nitrogen (as N)	0.2	mg/L	0.8	-	-
Heavy Metals					
Aluminium	0.05	mg/L	3.2	-	-
Aluminium (filtered)	0.05	mg/L	0.19	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.46	-	-
Iron (filtered)	0.05	mg/L	0.10	< 0.05	< 0.05

Client Sample ID			QC157	QC156	QC158
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-JI15238	M16-JI15239	M16-JI15240
Date Sampled			Jul 19, 2016	Jul 19, 2016	Jul 19, 2016
Test/Reference	LOR	Unit			
Heavy Metals					
Lead	0.001	mg/L	0.003	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Alkali Metals					
Calcium	0.5	mg/L	17	-	-
Magnesium	0.5	mg/L	3.3	-	-
Potassium	0.5	mg/L	19	-	-
Sodium	0.5	mg/L	18	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Jul 22, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jul 20, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jul 20, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jul 22, 2016	7 Day
Organochlorine Pesticides - Method: USEPA 8081 Organochlorine Pesticides	Melbourne	Jul 22, 2016	7 Day
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Melbourne	Jul 22, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jul 20, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jul 20, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jul 20, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jul 20, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jul 20, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Jul 20, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jul 20, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jul 20, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jul 20, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jul 20, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jul 21, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jul 21, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jul 21, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jul 21, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jul 21, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jul 21, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jul 25, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 20, 2016	180 Day

Description	Testing Site	Extracted	Holding Time
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Jul 20, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Jul 20, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jul 20, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jul 25, 2016	24 Hour

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	105			70-130	Pass	
TRH C10-C14	%	101			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	104			70-130	Pass	
Toluene	%	78			70-130	Pass	
Ethylbenzene	%	84			70-130	Pass	
m&p-Xylenes	%	81			70-130	Pass	
Xylenes - Total	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	71			70-130	Pass	
TRH C6-C10	%	95			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4,4'-DDD	%	111			70-130	Pass	
4,4'-DDE	%	109			70-130	Pass	
4,4'-DDT	%	95			70-130	Pass	
a-BHC	%	118			70-130	Pass	
Aldrin	%	108			70-130	Pass	
b-BHC	%	112			70-130	Pass	
d-BHC	%	130			70-130	Pass	
Dieldrin	%	123			70-130	Pass	
Endosulfan I	%	114			70-130	Pass	
Endosulfan II	%	108			70-130	Pass	
Endosulfan sulphate	%	107			70-130	Pass	
Endrin	%	106			70-130	Pass	
Endrin aldehyde	%	95			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	%	117			70-130	Pass	
g-BHC (Lindane)	%	123			70-130	Pass	
Heptachlor	%	129			70-130	Pass	
Heptachlor epoxide	%	115			70-130	Pass	
Hexachlorobenzene	%	89			70-130	Pass	
Methoxychlor	%	99			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	95			70-130	Pass	
Dimethoate	%	104			70-130	Pass	
Ethion	%	105			70-130	Pass	
Fenitrothion	%	122			70-130	Pass	
Methyl parathion	%	115			70-130	Pass	
Mevinphos	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	101			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	105			70-130	Pass	
Chloride	%	106			70-130	Pass	
Phosphate total (as P)	%	110			70-130	Pass	
Phosphorus reactive (as P)	%	111			70-130	Pass	
Sulphate (as S)	%	106			70-130	Pass	
Total Dissolved Solids	%	94			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Total Alkalinity (as CaCO3)	%	111			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	94			70-130	Pass	
Nitrate & Nitrite (as N)	%	102			70-130	Pass	
Nitrate (as N)	%	102			70-130	Pass	
Nitrite (as N)	%	101			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	115			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	95			80-120	Pass	
Aluminium (filtered)	%	95			80-120	Pass	
Arsenic	%	81			80-120	Pass	
Arsenic (filtered)	%	103			80-120	Pass	
Cadmium	%	102			70-130	Pass	
Cadmium (filtered)	%	102			70-130	Pass	
Chromium	%	101			80-120	Pass	
Chromium (filtered)	%	101			80-120	Pass	
Copper	%	94			80-120	Pass	
Copper (filtered)	%	94			80-120	Pass	
Iron	%	97			80-120	Pass	
Iron (filtered)	%	97			80-120	Pass	
Lead	%	81			80-120	Pass	
Lead (filtered)	%	102			80-120	Pass	
Manganese	%	98			80-120	Pass	
Manganese (filtered)	%	98			80-120	Pass	
Mercury	%	80			75-125	Pass	
Mercury (filtered)	%	95			70-130	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel		%	108			80-120	Pass	
Nickel (filtered)		%	108			80-120	Pass	
Selenium		%	84			80-120	Pass	
Selenium (filtered)		%	111			80-120	Pass	
Zinc		%	81			80-120	Pass	
Zinc (filtered)		%	104			80-120	Pass	
LCS - % Recovery								
Alkali Metals								
Calcium		%	101			70-130	Pass	
Magnesium		%	114			70-130	Pass	
Potassium		%	99			70-130	Pass	
Sodium		%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-JI15925	NCP	%	103		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15535	NCP	%	75		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-JI15535	NCP	%	75		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Total Kjeldahl Nitrogen (as N)	B16-JI14685	NCP	%	74		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic	M16-JI15606	NCP	%	91		75-125	Pass	
Arsenic (filtered)	M16-JI14389	NCP	%	103		70-130	Pass	
Cadmium	S16-JI18610	NCP	%	94		70-130	Pass	
Cadmium (filtered)	S16-JI16532	NCP	%	94		70-130	Pass	
Chromium	M16-JI15606	NCP	%	82		75-125	Pass	
Chromium (filtered)	M16-JI14389	NCP	%	103		70-130	Pass	
Copper	M16-JI15606	NCP	%	91		75-125	Pass	
Copper (filtered)	M16-JI14389	NCP	%	100		70-130	Pass	
Iron	M16-JI15606	NCP	%	80		75-125	Pass	
Iron (filtered)	M16-JI14389	NCP	%	85		70-130	Pass	
Lead	M16-JI15606	NCP	%	90		75-125	Pass	
Lead (filtered)	M16-JI14389	NCP	%	100		70-130	Pass	
Manganese	M16-JI15606	NCP	%	86		75-125	Pass	
Manganese (filtered)	M16-JI14389	NCP	%	105		70-130	Pass	
Mercury	M16-JI15606	NCP	%	95		70-130	Pass	
Mercury (filtered)	M16-JI14389	NCP	%	84		70-130	Pass	
Nickel	M16-JI15606	NCP	%	91		75-125	Pass	
Nickel (filtered)	M16-JI14389	NCP	%	100		70-130	Pass	
Selenium	M16-JI15606	NCP	%	96		75-125	Pass	
Selenium (filtered)	M16-JI14389	NCP	%	109		70-130	Pass	
Zinc	M16-JI15606	NCP	%	92		75-125	Pass	
Zinc (filtered)	M16-JI14389	NCP	%	103		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Ammonia (as N)	M16-JI15219	CP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI15219	CP	%	97		70-130	Pass	
Nitrate (as N)	M16-JI15219	CP	%	96		70-130	Pass	
Nitrite (as N)	M16-JI15219	CP	%	98		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkali Metals				Result 1					
Calcium	M16-JI15219	CP	%	93			70-130	Pass	
Magnesium	M16-JI15219	CP	%	105			70-130	Pass	
Potassium	M16-JI15219	CP	%	91			70-130	Pass	
Sodium	M16-JI15219	CP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-JI15225	CP	%	122			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M16-JI16825	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-JI16825	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-JI15229	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI15229	CP	%	97			70-130	Pass	
Nitrate (as N)	M16-JI15229	CP	%	96			70-130	Pass	
Nitrite (as N)	M16-JI15229	CP	%	100			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-JI15230	CP	%	91			70-130	Pass	
Magnesium	M16-JI15230	CP	%	93			70-130	Pass	
Potassium	M16-JI15230	CP	%	91			70-130	Pass	
Sodium	M16-JI15230	CP	%	90			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-JI15235	CP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-JI15237	CP	%	112			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-JI15238	CP	%	77			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-JI15238	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M16-JI15238	CP	%	97			70-130	Pass	
Nitrate (as N)	M16-JI15238	CP	%	97			70-130	Pass	
Nitrite (as N)	M16-JI15238	CP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-JI15184	CP	mg/L	54	60	11	30%	Pass	
Conductivity (at 25°C)	M16-JI15184	CP	uS/cm	280	290	1.0	30%	Pass	
pH	M16-JI15184	CP	pH Units	4.4	4.4	pass	30%	Pass	
Total Dissolved Solids	M16-JI15184	CP	mg/L	270	330	19	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15184	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-JI15184	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15184	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-JI15184	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-JI11833	NCP	mg/L	0.25	0.23	10	30%	Pass
Aluminium (filtered)	M16-JI11835	NCP	mg/L	0.21	0.25	16	30%	Pass
Arsenic	M16-JI15606	NCP	mg/L	0.008	0.007	10	30%	Pass
Arsenic (filtered)	M16-JI14389	NCP	mg/L	0.003	0.003	6.0	30%	Pass
Cadmium	S16-JI18609	NCP	mg/L	0.0015	0.0015	4.0	30%	Pass
Cadmium (filtered)	S16-JI16531	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Chromium	M16-JI15606	NCP	mg/L	0.078	0.079	1.0	30%	Pass
Chromium (filtered)	M16-JI14389	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-JI15606	NCP	mg/L	0.001	0.001	7.0	30%	Pass
Copper (filtered)	M16-JI14389	NCP	mg/L	0.005	0.005	2.0	30%	Pass
Iron	M16-JI15606	NCP	mg/L	0.20	0.20	2.0	30%	Pass
Iron (filtered)	M16-JI14389	NCP	mg/L	0.74	0.74	1.0	30%	Pass
Lead	M16-JI15606	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-JI14389	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-JI15606	NCP	mg/L	0.35	0.37	4.0	30%	Pass
Manganese (filtered)	M16-JI14389	NCP	mg/L	0.006	0.005	5.0	30%	Pass
Mercury	M16-JI15606	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-JI14389	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-JI15606	NCP	mg/L	0.001	< 0.001	16	30%	Pass
Nickel (filtered)	M16-JI14389	NCP	mg/L	0.005	0.004	8.0	30%	Pass
Selenium	M16-JI15606	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-JI14389	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-JI15606	NCP	mg/L	0.009	0.009	<1	30%	Pass
Zinc (filtered)	M16-JI14389	NCP	mg/L	0.004	0.004	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI15219	CP	mg/L	42	46	9.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI15219	CP	mg/L	0.46	0.46	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-JI15219	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-JI15219	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-JI15219	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI15219	CP	mg/L	3.2	3.2	<1	30%	Pass
Magnesium	M16-JI15219	CP	mg/L	5.7	5.6	2.0	30%	Pass
Potassium	M16-JI15219	CP	mg/L	3.7	3.6	1.0	30%	Pass
Sodium	M16-JI15219	CP	mg/L	19	18	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-JI15224	CP	mg/L	0.10	0.10	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-JI15226	CP	uS/cm	280	280	1.0	30%	Pass
pH	M16-JI15226	CP	pH Units	6.7	6.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15226	CP	mg/L	71	70	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI15226	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15226	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI15226	CP	mg/L	71	70	1.0	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	M16-JI16824	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M16-JI16824	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M16-JI16824	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-JI16824	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-JI16824	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-JI16824	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-JI15228	CP	uS/cm	660	660	<1	30%	Pass
pH	M16-JI15228	CP	pH Units	6.5	6.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15228	CP	mg/L	77	77	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI15228	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15228	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI15228	CP	mg/L	77	77	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI15229	CP	mg/L	13	11	19	30%	Pass
Conductivity (at 25°C)	M16-JI15229	CP	uS/cm	640	650	1.0	30%	Pass
pH	M16-JI15229	CP	pH Units	6.4	6.4	pass	30%	Pass
Phosphorus reactive (as P)	M16-JI15229	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Turbidity	M16-JI15229	CP	NTU	6.3	6.5	3.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15229	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI15229	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15229	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI15229	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI15229	CP	mg/L	0.19	0.18	7.0	30%	Pass
Nitrate & Nitrite (as N)	M16-JI15229	CP	mg/L	0.21	0.20	4.0	30%	Pass
Nitrate (as N)	M16-JI15229	CP	mg/L	0.21	0.20	4.0	30%	Pass
Nitrite (as N)	M16-JI15229	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-JI15230	CP	mg/L	25	22	13	30%	Pass
Magnesium	M16-JI15230	CP	mg/L	15	12	20	30%	Pass
Potassium	M16-JI15230	CP	mg/L	6.2	5.8	6.0	30%	Pass
Sodium	M16-JI15230	CP	mg/L	86	78	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-JI15234	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-JI15234	CP	mg/L	0.7	0.7	2.1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-JI15236	CP	uS/cm	260	300	<1	30%	Pass
pH	M16-JI15236	CP	pH Units	7.0	6.9	pass	30%	Pass

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15236	CP	mg/L	< 20	21	6.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI15236	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15236	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI15236	CP	mg/L	< 20	21	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-JI15237	CP	mg/L	60	58	2.9	30%	Pass
Sulphate (as S)	M16-JI15237	CP	mg/L	11	11	1.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-JI15238	CP	mg/L	22	23	3.0	30%	Pass
Conductivity (at 25°C)	M16-JI15238	CP	uS/cm	280	290	1.0	30%	Pass
pH	M16-JI15238	CP	pH Units	6.6	6.6	pass	30%	Pass
Phosphorus reactive (as P)	M16-JI15238	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-JI15238	CP	mg/L	54	53	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-JI15238	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-JI15238	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-JI15238	CP	mg/L	54	53	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-JI15238	CP	mg/L	0.03	0.03	15	30%	Pass
Nitrate & Nitrite (as N)	M16-JI15238	CP	mg/L	0.36	0.36	<1	30%	Pass
Nitrate (as N)	M16-JI15238	CP	mg/L	0.34	0.34	1.0	30%	Pass
Nitrite (as N)	M16-JI15238	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1606351**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 13-Jul-2016 17:40
Date Analysis Commenced : 13-Jul-2016
Issue Date : 20-Jul-2016 14:54



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Ultratrace cadmium conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- ED041G (Sulfate Turbidimetric): LOR for samples 'QC145' and 'QC146' raised due to possible sample matrix interference.
- EK061G/EK067G (TKN/TP): LOR for samples raised due to possible sample matrix interference.
- EG020 (Total and Dissolved Metals): It is recognised that total concentration is less than dissolved for Aluminium and Zinc for samples 'QC148' and 'QC144' respectively. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC144	QC145	QC146	QC148	----
Client sampling date / time				[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	----	
Compound	CAS Number	LOR	Unit	EP1606351-001	EP1606351-002	EP1606351-003	EP1606351-004	-----	
				Result	Result	Result	Result	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.38	7.87	7.68	3.68	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	6600	2120	1750	647	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	3940	1610	997	568	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	----	----	0.9	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	299	208	217	<1	----	
Total Alkalinity as CaCO3	----	1	mg/L	299	208	217	<1	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	44	5	11	78	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	180	<10	<10	2	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1750	569	482	165	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	190	48	63	5	----	
Magnesium	7439-95-4	1	mg/L	177	37	36	11	----	
Sodium	7440-23-5	1	mg/L	954	328	226	87	----	
Potassium	7440-09-7	1	mg/L	10	4	5	2	----	
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.90	0.01	0.01	0.98	----	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	<0.001	<0.001	----	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.050	0.020	0.003	0.002	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.330	<0.005	<0.005	<0.005	----	
Iron	7439-89-6	0.05	mg/L	0.90	0.09	<0.05	0.54	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC144	QC145	QC146	QC148	----
Client sampling date / time				[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	----	
Compound	CAS Number	LOR	Unit	EP1606351-001	EP1606351-002	EP1606351-003	EP1606351-004	-----	
				Result	Result	Result	Result	----	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	7.09	7.35	4.94	0.92	----	
Arsenic	7440-38-2	0.001	mg/L	0.004	0.007	0.010	<0.001	----	
Chromium	7440-47-3	0.001	mg/L	0.012	0.016	0.006	0.002	----	
Copper	7440-50-8	0.001	mg/L	0.009	0.003	0.002	0.001	----	
Lead	7439-92-1	0.001	mg/L	0.008	0.011	0.006	<0.001	----	
Manganese	7439-96-5	0.001	mg/L	0.057	0.026	0.006	0.002	----	
Nickel	7440-02-0	0.001	mg/L	0.009	0.013	0.012	<0.001	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
Zinc	7440-66-6	0.005	mg/L	0.317	0.027	0.010	<0.005	----	
Iron	7439-89-6	0.05	mg/L	9.27	5.58	15.0	0.55	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	0.08	0.07	<0.05	<0.05	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.62	0.69	0.28	0.03	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.06	<0.01	0.03	0.02	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.06	<0.01	0.03	0.02	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	1.2	0.8	3.1	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.1	1.2	0.8	3.1	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.10	0.23	0.08	<0.10	----	
EK071G: Reactive Phosphorus as P by discrete analyser									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC144	QC145	QC146	QC148	----
Client sampling date / time					[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	[13-Jul-2016]	----
Compound	CAS Number	LOR	Unit	EP1606351-001	EP1606351-002	EP1606351-003	EP1606351-004	-----	-----
				Result	Result	Result	Result		----
EK071G: Reactive Phosphorus as P by discrete analyser - Continued									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.16	0.08	0.03		----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	----	----	39		----
<i>Escherichia coli</i>	----	1	CFU/100mL	----	----	----	39		----

QUALITY CONTROL REPORT

Work Order	: EP1606351	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 13-Jul-2016
Order number	: ----	Date Analysis Commenced	: 13-Jul-2016
C-O-C number	: ----	Issue Date	: 20-Jul-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 517842)									
EP1606345-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.02	8.00	0.250	0% - 20%
EP1606354-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.94	7.94	0.00	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 517837)									
EP1606322-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	657	647	1.54	0% - 20%
EP1606343-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	188000	188000	0.00	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 517844)									
EP1606351-002	QC145	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2120	2120	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 517883)									
EP1606351-001	QC144	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3940	3980	1.09	0% - 20%
EA045: Turbidity (QC Lot: 518316)									
EP1606296-001	Anonymous	EA045: Turbidity	----	0.1	NTU	<0.1	<0.1	0.00	No Limit
EP1606311-002	Anonymous	EA045: Turbidity	----	0.1	NTU	32.9	33.2	0.907	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 517841)									
EP1606342-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	51	54	5.17	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	51	54	5.17	0% - 20%
EP1606345-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	323	344	6.23	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	323	344	6.23	0% - 20%
ED038A: Acidity (QC Lot: 523230)									
EP1606289-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	76	73	3.82	0% - 20%
EP1606329-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	4	4	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 517033)									
EP1606351-001	QC144	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	180	181	0.690	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 517032)									
EP1606351-001	QC144	ED045G: Chloride	16887-00-6	1	mg/L	1750	1800	2.98	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 520672)									
EP1606277-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3170	3020	4.97	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	2880	2710	5.90	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	58800	56500	3.88	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	892	864	3.25	0% - 20%
EP1606342-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	20	19	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	42	41	3.84	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 520675)									
EP1606351-004	QC148	ED093F: Calcium	7440-70-2	1	mg/L	5	5	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	87	86	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 520673)									
EP1606320-004	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.045	0.045	0.00	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.481	0.480	0.299	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.039	0.041	4.62	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.015	0.014	7.18	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.72	0.72	0.00	0% - 50%
EP1606342-004	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.058	0.058	0.00	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.029	0.028	0.00	0% - 20%
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.556	0.555	0.201	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 521739)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 521739) - continued									
EP1606084-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit		
EP1606340-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	30.0	31.1	3.47	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.047	0.046	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	2.47	2.56	3.34	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.010	<0.010	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.038	0.029	27.1	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	11.1	11.3	1.87	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.650	0.693	6.45	0% - 50%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	1.95	1.78	9.39	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.10	<0.10	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	9.52	10.1	5.72	0% - 20%		
EG020T: Total Metals by ICP-MS (QC Lot: 521742)									
EP1606351-002	QC145	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.016	0.018	13.4	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.026	0.026	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.013	0.013	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.027	0.029	6.78	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	7.35	8.36	12.8	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EG020A-T: Iron	7439-89-6	0.05	mg/L	5.58	6.04	8.05	0% - 20%		
EG035F: Dissolved Mercury by FIMS (QC Lot: 520674)									
EP1606320-009	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1606351-003	QC146	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 521754)									
EP1606341-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 521538)									
ES1615623-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 521549)									

Page : 5 of 10
 Work Order : EP1606351
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 521549) - continued									
ES1615623-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 517036)									
EP1606329-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 517030)									
EP1606351-001	QC144	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 517037)									
EP1606329-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	11.0	11.1	0.221	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 518860)									
EP1606351-001	QC144	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	2.2	10.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 518861)									
EP1606351-001	QC144	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.10	0.10	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 517031)									
EP1606351-001	QC144	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.07	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 517842)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 517837)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	95.1	95	105	
EA010P: Conductivity by PC Titrator (QCLot: 517844)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.9	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 517883)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.3	83	111	
				<10	293 mg/L	108	70	130	
EA045: Turbidity (QCLot: 518316)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 517841)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	108	76	126	
				<1	200 mg/L	101	90	106	
ED038A: Acidity (QCLot: 523230)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	109	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 517033)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	98.5	89	113	
				<1	100 mg/L	100	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 517032)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	103	84	120	
				<1	1000 mg/L	103	84	110	
ED093F: Dissolved Major Cations (QCLot: 520672)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	95.0	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	96.5	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.2	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.6	90	110	
ED093F: Dissolved Major Cations (QCLot: 520675)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.0	91	109	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
ED093F: Dissolved Major Cations (QCLot: 520675) - continued									
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	96.3	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.8	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.8	90	110	
EG020F: Dissolved Metals by ICP-MS (QCLot: 520673)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	84	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.7	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.1	84	110	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	99.0	85	107	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.2	85	109	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.4	84	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	88	112	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	89	115	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	98.7	84	112	
EG020T: Total Metals by ICP-MS (QCLot: 521739)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.1	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	99.6	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	90.2	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.6	85	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.3	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.3	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.7	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.3	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.4	81	103	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	96.0	82	112	
EG020T: Total Metals by ICP-MS (QCLot: 521742)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	96.6	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.4	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.3	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.1	85	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.8	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	94.4	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.8	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.1	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.2	81	103	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.9	82	112	
EG035F: Dissolved Mercury by FIMS (QCLot: 520674)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.0	92	116	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 521754)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 521538)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	95.5	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 521549)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.8	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 517036)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 517030)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 517037)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 518860)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.8	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 518861)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	83.3	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 517031)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	96.5	87	115	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 517033)							
EP1606351-001	QC144	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	112	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 517032)							
EP1606351-002	QC145	ED045G: Chloride	16887-00-6	1000 mg/L	85.9	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 520673)							
EP1606320-005	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	107	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	95.1	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	96.6	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	94.5	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	94.5	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	96.3	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	98.6	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 521739)							
EP1606333-009	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	97.2	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	91.0	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	93.6	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	86.0	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	97.7	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.4	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	97.4	70	130
EG020T: Total Metals by ICP-MS (QCLot: 521742)							
EP1606351-003	QC146	EG020A-T: Arsenic	7440-38-2	1 mg/L	101	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.1	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	92.9	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	85.2	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	99.9	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	98.2	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	97.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 520674)							
EP1606342-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 521754)							
EP1606341-010	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	101	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 521538)							
ES1615623-002	Anonymous	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	90.5	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 521549)							
EP1606351-001	QC144	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	94.1	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 517036)							
EP1606351-002	QC145	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.2	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 517030)							
EP1606351-002	QC145	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	107	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 517037)							
EP1606351-002	QC145	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	105	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 518860)							
EP1606351-001	QC144	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	96.5	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 518861)							
EP1606351-001	QC144	EK067G: Total Phosphorus as P	----	1 mg/L	89.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 517031)							
EP1606351-002	QC145	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	102	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1606351	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 13-Jul-2016
Site	: ----	Issue Date	: 20-Jul-2016
Sampler	: HARRIET CARTER	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
QC144, QC146,	QC145, QC148	----	----	14-Jul-2016	13-Jul-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	14-Jul-2016	13-Jul-2016	*
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	14-Jul-2016	10-Aug-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	14-Jul-2016	20-Jul-2016	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045)							
QC148		13-Jul-2016	----	----	14-Jul-2016	15-Jul-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	14-Jul-2016	27-Jul-2016	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038)							
QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	20-Jul-2016	27-Jul-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	10-Aug-2016	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	10-Aug-2016	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	18-Jul-2016	10-Aug-2016	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	18-Jul-2016	09-Jan-2017	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC144, QC146,	QC145, QC148	13-Jul-2016	19-Jul-2016	09-Jan-2017	✓	19-Jul-2016	09-Jan-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	19-Jul-2016	10-Aug-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	19-Jul-2016	10-Aug-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	19-Jul-2016	09-Jan-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC144, QC146,	QC145, QC148	13-Jul-2016	19-Jul-2016	09-Jan-2017	✓	19-Jul-2016	09-Jan-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC144, QC146,	QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	10-Aug-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) QC144, QC146, QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	15-Jul-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC144, QC146, QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	10-Aug-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC144, QC146, QC145, QC148	13-Jul-2016	18-Jul-2016	10-Aug-2016	✓	18-Jul-2016	10-Aug-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC144, QC146, QC145, QC148	13-Jul-2016	18-Jul-2016	10-Aug-2016	✓	18-Jul-2016	10-Aug-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G) QC144, QC146, QC145, QC148	13-Jul-2016	----	----	----	13-Jul-2016	15-Jul-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC148	13-Jul-2016	----	----	----	14-Jul-2016	14-Jul-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	3	29	10.34	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	3	24	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	3	23	13.04	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	10	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	4	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	23	8.70	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page : 7 of 10
 Work Order : EP1606351
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Matrix Spikes (MS) - Continued							
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING AUGUST**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 16, 2016 8:10 AM**
Eurofins | mgt reference: **511908**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **511908-W**
Project name NL_BASELINE GW_SW MONITORING AUGUST
Project ID ENAUPERT04483AA
Received Date Aug 16, 2016

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			M16-Au15214	M16-Au15215	M16-Au15216	M16-Au15217
Eurofins mgt Sample No.			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	79	78	60	96
Chloride	1	mg/L	2700	1300	13000	2000
Conductivity (at 25°C)	1	uS/cm	9200	4400	37000	7200
pH	0.1	pH Units	6.1	5.7	7.1	4.9
Phosphate total (as P)	0.05	mg/L	0.62	0.27	0.64	0.44
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.22	0.24	< 0.05
Sulphate (as S)	5	mg/L	60	53	460	78
Total Dissolved Solids	10	mg/L	5100	2400	25000	4000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	35	< 20	190	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	35	< 20	190	< 20
Nitrogens (speciated)						
Comments						G01
Ammonia (as N)	0.01	mg/L	0.39	0.29	0.06	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	39	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.03	39	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.06	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.8	1.4	< 2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.1	1.5	< 2
Total Nitrogen (as N)	0.2	mg/L	0.4	1.1	41	< 2
Heavy Metals						
Aluminium	0.05	mg/L	0.79	0.32	0.98	6.3
Aluminium (filtered)	0.05	mg/L	< 0.05	0.05	0.98	0.07
Arsenic	0.001	mg/L	0.004	0.002	< 0.005	0.034
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.005	0.007
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00038	0.00063
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00043	0.00009
Chromium	0.001	mg/L	0.005	0.001	< 0.005	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.012	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.008	< 0.001
Iron	0.05	mg/L	15	13	1.3	8.7
Iron (filtered)	0.05	mg/L	< 0.05	13	0.43	0.91

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			M16-Au15214	M16-Au15215	M16-Au15216	M16-Au15217
Eurofins mgt Sample No.			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	0.007	< 0.001	< 0.005	0.065
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.005	0.003
Manganese	0.005	mg/L	0.018	< 0.005	< 0.025	0.044
Manganese (filtered)	0.005	mg/L	0.016	< 0.005	< 0.025	0.042
Mercury	0.0001	mg/L	0.0011	< 0.0001	< 0.0005	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0005	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.007	0.011
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.006	0.005
Selenium	0.001	mg/L	< 0.001	< 0.001	0.022	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.021	< 0.001
Zinc	0.005	mg/L	0.013	< 0.005	0.17	1.2
Zinc (filtered)	0.001	mg/L	0.012	0.003	0.15	0.15
Alkali Metals						
Calcium	0.5	mg/L	31	21	200	43
Magnesium	0.5	mg/L	200	100	1000	190
Potassium	0.5	mg/L	42	21	150	22
Sodium	0.5	mg/L	1400	640	6500	990

Client Sample ID			MW54 Water	SWL20_1 Water	SWL20_2 Water	SWL20_3 Water
Sample Matrix			M16-Au15218	M16-Au15219	M16-Au15220	M16-Au15221
Eurofins mgt Sample No.			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	17	13	10	10
Chloride	1	mg/L	490	1000	1000	990
Conductivity (at 25°C)	1	uS/cm	2200	3500	3200	3200
pH	0.1	pH Units	7.7	6.8	6.6	6.9
Phosphate total (as P)	0.05	mg/L	0.31	0.08	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	25	30	30	36
Total Dissolved Solids	10	mg/L	1300	2000	2000	2000
Turbidity	1	NTU	-	2.8	2.6	2.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	170	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	170	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.01	0.01	0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	0.6	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	0.6	0.5
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	0.6	0.5

Client Sample ID			MW54	SWL20_1	SWL20_2	SWL20_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au15218	M16-Au15219	M16-Au15220	M16-Au15221
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.49	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	11	1.4	1.3	1.4
Iron (filtered)	0.05	mg/L	< 0.05	0.65	0.64	0.55
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.028	0.009	0.009	0.009
Manganese (filtered)	0.005	mg/L	0.025	0.008	0.008	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.002	0.001	0.001
Nickel (filtered)	0.001	mg/L	0.004	0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.035	0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	0.017	< 0.001	0.001	0.004
Alkali Metals						
Calcium	0.5	mg/L	120	10	11	10
Magnesium	0.5	mg/L	42	62	62	61
Potassium	0.5	mg/L	9.0	15	14	13
Sodium	0.5	mg/L	220	560	540	520
Pathogens						
E.coli	1	MPN/100mL	-	63	52	63
Thermotolerant Coliforms	1	MPN/100mL	-	63	63	63

Client Sample ID			SWL21_1	SWL21_2	SWL21_3	QC161
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au15222	M16-Au15223	M16-Au15224	M16-Au15225
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Chloride	1	mg/L	440	460	440	-
Conductivity (at 25°C)	1	uS/cm	1700	1600	1700	-
pH	0.1	pH Units	7.5	7.5	7.5	-
Phosphate total (as P)	0.05	mg/L	0.84	0.88	0.84	-
Phosphorus reactive (as P)	0.05	mg/L	0.32	0.33	0.31	-
Sulphate (as S)	5	mg/L	12	12	12	-
Total Dissolved Solids	10	mg/L	^{Q19} 1100	^{Q19} 1100	^{Q19} 1100	-
Turbidity	1	NTU	5.7	5.5	7.9	-

Client Sample ID			SWL21_1	SWL21_2	SWL21_3	QC161
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au15222	M16-Au15223	M16-Au15224	M16-Au15225
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	63	66	65	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	63	66	65	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.05	0.05	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	0.05	0.06	-
Nitrate (as N)	0.02	mg/L	0.04	0.04	0.04	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.9	1.4	1.8	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9	1.5	1.9	-
Total Nitrogen (as N)	0.2	mg/L	2.0	1.6	2.0	-
Heavy Metals						
Aluminium	0.05	mg/L	0.40	0.17	0.43	-
Aluminium (filtered)	0.05	mg/L	0.09	0.12	0.11	< 0.05
Arsenic	0.001	mg/L	0.001	0.001	0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	0.002	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.6	2.1	2.6	-
Iron (filtered)	0.05	mg/L	1.2	1.3	1.3	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.028	0.025	0.028	-
Manganese (filtered)	0.005	mg/L	0.022	0.025	0.025	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.002	0.003	-
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.007	0.012	-
Zinc (filtered)	0.001	mg/L	0.005	0.006	0.006	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	22	23	22	-
Magnesium	0.5	mg/L	41	42	42	-
Potassium	0.5	mg/L	9.5	9.8	9.6	-
Sodium	0.5	mg/L	230	240	240	-
Pathogens						
E.coli	1	MPN/100mL	340	150	490	-
Thermotolerant Coliforms	1	MPN/100mL	620	200	990	-

Client Sample ID			QC160	QC159
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Au15226	M16-Au15227
Date Sampled			Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	-	32
Chloride	1	mg/L	-	2700
Conductivity (at 25°C)	1	uS/cm	-	8900
pH	0.1	pH Units	-	6.5
Phosphate total (as P)	0.05	mg/L	-	0.66
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05
Sulphate (as S)	5	mg/L	-	62
Total Dissolved Solids	10	mg/L	-	5100
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	28
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	28
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	-	0.25
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05
Nitrate (as N)	0.02	mg/L	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	0.3
Total Nitrogen (as N)	0.2	mg/L	-	0.3
Heavy Metals				
Aluminium	0.05	mg/L	-	0.73
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	-	22
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead	0.001	mg/L	-	0.006
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	-	0.017
Manganese (filtered)	0.005	mg/L	< 0.005	0.016
Mercury	0.0001	mg/L	-	0.0018
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.002
Selenium	0.001	mg/L	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.028
Zinc (filtered)	0.001	mg/L	< 0.001	0.002

Client Sample ID			QC160	QC159
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Au15226	M16-Au15227
Date Sampled			Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit		
Alkali Metals				
Calcium	0.5	mg/L	-	32
Magnesium	0.5	mg/L	-	200
Potassium	0.5	mg/L	-	42
Sodium	0.5	mg/L	-	1500

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 16, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 16, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 16, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 16, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 16, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 16, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 16, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 16, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 16, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 16, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 23, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 23, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 23, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 23, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 23, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 25, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 25, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 18, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 16, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Aug 16, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Aug 16, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	107		70-130	Pass	
Chloride	%	112		70-130	Pass	
Phosphate total (as P)	%	106		70-130	Pass	
Phosphorus reactive (as P)	%	123		70-130	Pass	
Sulphate (as S)	%	114		70-130	Pass	
Total Dissolved Solids	%	97		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	88		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	107		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	94		70-130	Pass	
Nitrate & Nitrite (as N)	%	96		70-130	Pass	
Nitrate (as N)	%	96		70-130	Pass	
Nitrite (as N)	%	98		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	95		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	82		80-120	Pass	
Aluminium (filtered)	%	82		80-120	Pass	
Arsenic	%	90		80-120	Pass	
Arsenic (filtered)	%	85		80-120	Pass	
Cadmium	%	97		80-120	Pass	
Cadmium (filtered)	%	101		70-130	Pass	
Chromium	%	94		80-120	Pass	
Chromium (filtered)	%	86		80-120	Pass	
Copper	%	87		80-120	Pass	
Copper (filtered)	%	83		80-120	Pass	
Iron	%	85		80-120	Pass	
Iron (filtered)	%	95		80-120	Pass	
Lead	%	92		80-120	Pass	
Lead (filtered)	%	88		80-120	Pass	
Manganese	%	87		80-120	Pass	
Manganese (filtered)	%	84		80-120	Pass	
Mercury	%	97		75-125	Pass	
Mercury (filtered)	%	87		70-130	Pass	
Nickel	%	86		80-120	Pass	
Nickel (filtered)	%	82		80-120	Pass	
Selenium	%	94		80-120	Pass	
Selenium (filtered)	%	87		80-120	Pass	
Zinc (filtered)	%	84		80-120	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	105		70-130	Pass	
Magnesium	%	106		70-130	Pass	
Potassium	%	102		70-130	Pass	
Sodium	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-Au14560	NCP	%	112		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Au16175	NCP	%	116		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Au15186	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au15186	NCP	%	91		70-130	Pass	
Nitrate (as N)	M16-Au15186	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-Au15186	NCP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Au12787	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	B16-Au14523	NCP	%	90		75-125	Pass	
Arsenic (filtered)	M16-Au14049	NCP	%	95		70-130	Pass	
Cadmium (filtered)	S16-Au22956	NCP	%	109		70-130	Pass	
Chromium	B16-Au14523	NCP	%	86		75-125	Pass	
Chromium (filtered)	M16-Au14049	NCP	%	93		70-130	Pass	
Copper	B16-Au14523	NCP	%	78		75-125	Pass	
Copper (filtered)	M16-Au14049	NCP	%	85		70-130	Pass	
Lead	B16-Au14523	NCP	%	83		75-125	Pass	
Lead (filtered)	M16-Au14049	NCP	%	91		70-130	Pass	
Manganese	B16-Au14513	NCP	%	91		75-125	Pass	
Manganese (filtered)	M16-Au14688	NCP	%	85		70-130	Pass	
Mercury	B16-Au14513	NCP	%	100		70-130	Pass	
Mercury (filtered)	M16-Au14049	NCP	%	80		70-130	Pass	
Nickel	B16-Au14523	NCP	%	81		75-125	Pass	
Nickel (filtered)	M16-Au14049	NCP	%	86		70-130	Pass	
Selenium	B16-Au14523	NCP	%	94		75-125	Pass	
Selenium (filtered)	M16-Au14049	NCP	%	106		70-130	Pass	
Zinc	B16-Au14513	NCP	%	94		75-125	Pass	
Zinc (filtered)	M16-Au14049	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron (filtered)	M16-Au14049	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron	M16-Au16329	NCP	%	91		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Au15221	CP	%	86		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Au15223	CP	%	102		70-130	Pass	
Magnesium	M16-Au15223	CP	%	108		70-130	Pass	
Potassium	M16-Au15223	CP	%	97		70-130	Pass	
Sodium	M16-Au15223	CP	%	101		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Au15226	CP	%	99		70-130	Pass	
Arsenic	M16-Au15226	CP	%	98		70-130	Pass	
Cadmium	M16-Au15226	CP	%	94		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	M16-Au15226	CP	%	101			70-130	Pass	
Copper	M16-Au15226	CP	%	91			70-130	Pass	
Iron	M16-Au15226	CP	%	99			70-130	Pass	
Lead	M16-Au15226	CP	%	91			70-130	Pass	
Manganese	M16-Au15226	CP	%	97			70-130	Pass	
Mercury	M16-Au15226	CP	%	94			70-130	Pass	
Nickel	M16-Au15226	CP	%	92			70-130	Pass	
Selenium	M16-Au15226	CP	%	98			70-130	Pass	
Zinc	M16-Au15226	CP	%	83			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Au15227	CP	%	72			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M16-Au15227	CP	%	72			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	B16-Au14523	NCP	%	88			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Au15214	CP	uS/cm	9200	9100	1.0	30%	Pass	
pH	M16-Au15214	CP	pH Units	6.1	6.0	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au15214	CP	mg/L	35	29	17	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au15214	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au15214	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au15214	CP	mg/L	35	29	17	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au15186	NCP	mg/L	0.48	0.47	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au15186	NCP	mg/L	0.64	0.61	4.0	30%	Pass	
Nitrate (as N)	M16-Au15186	NCP	mg/L	0.64	0.61	4.0	30%	Pass	
Nitrite (as N)	M16-Au15186	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Au12786	NCP	mg/L	< 0.2	0.3	110	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	B16-Au15120	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	B16-Au14523	NCP	mg/L	0.004	0.004	5.0	30%	Pass	
Arsenic (filtered)	M16-Au14049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S16-Au22956	NCP	mg/L	0.0001	0.0001	<1	30%	Pass	
Chromium	B16-Au14523	NCP	mg/L	0.015	0.014	9.0	30%	Pass	
Chromium (filtered)	M16-Au14049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B16-Au14523	NCP	mg/L	0.023	0.022	4.0	30%	Pass	
Copper (filtered)	M16-Au14049	NCP	mg/L	0.014	0.013	4.0	30%	Pass	
Iron	M16-Au15214	CP	mg/L	15	18	20	30%	Pass	
Iron (filtered)	B16-Au14516	NCP	mg/L	34	33	3.0	30%	Pass	
Lead	B16-Au14523	NCP	mg/L	0.029	0.028	5.0	30%	Pass	
Lead (filtered)	M16-Au14049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	B16-Au14523	NCP	mg/L	0.43	0.43	1.0	30%	Pass	
Manganese (filtered)	M16-Au14049	NCP	mg/L	0.82	0.79	4.0	30%	Pass	
Mercury	M16-Au15214	CP	mg/L	0.0011	0.0011	1.0	30%	Pass	
Mercury (filtered)	M16-Au14049	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Nickel	B16-Au14523	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Nickel (filtered)	M16-Au14049	NCP	mg/L	0.002	0.002	3.0	30%	Pass	
Selenium	B16-Au14523	NCP	mg/L	0.001	0.001	14	30%	Pass	
Selenium (filtered)	M16-Au14049	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Au15214	CP	mg/L	0.013	0.013	<1	30%	Pass	
Zinc (filtered)	M16-Au14049	NCP	mg/L	0.020	0.019	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Au15218	CP	uS/cm	2200	2100	1.0	30%	Pass	
pH	M16-Au15218	CP	pH Units	7.7	7.6	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au15218	CP	mg/L	170	170	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au15218	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au15218	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au15218	CP	mg/L	170	170	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Au15219	CP	mg/L	0.08	0.06	32	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Au15220	CP	mg/L	10	10	3.0	30%	Pass	
Total Dissolved Solids	M16-Au15220	CP	mg/L	2000	1900	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au15221	CP	mg/L	990	1000	1.6	30%	Pass	
Sulphate (as S)	M16-Au15221	CP	mg/L	36	32	13	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Au15223	CP	mg/L	23	25	8.0	30%	Pass	
Magnesium	M16-Au15223	CP	mg/L	42	46	9.0	30%	Pass	
Potassium	M16-Au15223	CP	mg/L	9.8	10	5.0	30%	Pass	
Sodium	M16-Au15223	CP	mg/L	240	250	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Au15224	CP	uS/cm	1700	1700	<1	30%	Pass	
pH	M16-Au15224	CP	pH Units	7.5	7.5	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au15224	CP	mg/L	65	65	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au15224	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au15224	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au15224	CP	mg/L	65	65	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Au15227	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	B16-Au14523	NCP	mg/L	0.0007	0.0007	3.0	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 18, 2016 8:23 AM**
Eurofins | mgt reference: **512252**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No filtered metals bottles supplied

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **512252-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Aug 18, 2016**

Client Sample ID			MW36	MW37	MW38	MW39
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17274	M16-Au17275	M16-Au17276	M16-Au17277
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	19	38	100	26
Chloride	1	mg/L	13	23	430	99
Conductivity (at 25°C)	1	uS/cm	150	120	1700	410
pH	0.1	pH Units	6.6	5.1	6.4	6.7
Phosphate total (as P)	0.05	mg/L	0.09	0.39	0.43	0.71
Phosphorus reactive (as P)	0.05	mg/L	0.09	0.19	0.38	0.71
Sulphate (as S)	5	mg/L	< 5	< 5	29	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 120	^{Q19} 120	^{Q19} 1200	^{Q19} 350
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	35	< 20	90	41
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	35	< 20	90	41
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.40	0.54	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	3.4	0.09	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	3.4	0.09	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	0.7	2.5	2.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	1.1	3.0	2.7
Total Nitrogen (as N)	0.2	mg/L	4.1	1.2	3.0	2.7
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.27	1.1	0.36
Aluminium (filtered)	0.05	mg/L	< 0.05	0.25	0.57	0.27
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.007	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.12	0.06	1.2	0.84
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	1.1	0.70
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	0.001

Client Sample ID			MW36	MW37	MW38	MW39
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17274	M16-Au17275	M16-Au17276	M16-Au17277
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	0.011
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.038	0.007	0.054	0.013
Zinc (filtered)	0.001	mg/L	0.027	0.006	0.011	0.003
Alkali Metals						
Calcium	0.5	mg/L	18	5.2	56	16
Magnesium	0.5	mg/L	2.1	1.8	29	7.1
Potassium	0.5	mg/L	0.5	1.2	24	10
Sodium	0.5	mg/L	7.5	12	210	46

Client Sample ID			MW40	MW42	MW43	MW44
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17278	M16-Au17279	M16-Au17280	M16-Au17281
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	47	36	73	20
Chloride	1	mg/L	95	51	1200	390
Conductivity (at 25°C)	1	uS/cm	330	200	4000	1600
pH	0.1	pH Units	5.1	4.4	6.5	7.2
Phosphate total (as P)	0.05	mg/L	0.13	0.08	0.24	0.24
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.16
Sulphate (as S)	5	mg/L	< 5	< 5	9.8	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 300	^{Q19} 180	^{Q19} 3100	^{Q19} 1200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	140	210
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	140	210
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.36	0.28	1.2	0.65
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.02	0.05	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.4	3.9	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	0.7	5.1	1.6
Total Nitrogen (as N)	0.2	mg/L	0.9	0.7	5.1	1.6

Client Sample ID			MW40 Water	MW42 Water	MW43 Water	MW44 Water
Sample Matrix			M16-Au17278	M16-Au17279	M16-Au17280	M16-Au17281
Eurofins mgt Sample No.			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.7	0.66	2.5	6.6
Aluminium (filtered)	0.05	mg/L	1.4	0.35	1.1	0.13
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.005	0.008
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.003
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.011	0.016
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.004
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.39	0.17	0.58	6.8
Iron (filtered)	0.05	mg/L	0.31	0.13	0.06	0.44
Lead	0.001	mg/L	< 0.001	0.003	0.003	0.013
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.007	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.003	0.004
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.004	0.006
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Zinc	0.005	mg/L	< 0.005	0.010	0.008	0.031
Zinc (filtered)	0.001	mg/L	0.001	0.009	0.002	0.003
Alkali Metals						
Calcium	0.5	mg/L	4.0	1.4	56	20
Magnesium	0.5	mg/L	7.9	3.7	95	29
Potassium	0.5	mg/L	1.6	0.8	7.0	3.4
Sodium	0.5	mg/L	48	24	540	240

Client Sample ID			MW48 Water	MW49 Water	M01SWL17_1 Water	M01SWL17_2 Water
Sample Matrix			M16-Au17282	M16-Au17283	M16-Au17284	M16-Au17285
Eurofins mgt Sample No.			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	51	53	69	67
Chloride	1	mg/L	880	1500	140	140
Conductivity (at 25°C)	1	uS/cm	3100	4900	540	530
pH	0.1	pH Units	4.5	4.8	3.7	3.7
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	43	68	< 5	< 5
Total Dissolved Solids	10	mg/L	1800	2700	^{Q19} 510	^{Q19} 510
Turbidity	1	NTU	-	-	1.1	1.1

Client Sample ID			MW48	MW49	M01SWL17_1	M01SWL17_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17282	M16-Au17283	M16-Au17284	M16-Au17285
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	< 0.01	0.11	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.07	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.07	0.04	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	2.2	2.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	2.3	2.3
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	2.3	2.4
Heavy Metals						
Aluminium	0.05	mg/L	3.6	1.8	1.0	1.00
Aluminium (filtered)	0.05	mg/L	0.20	0.16	0.92	0.91
Arsenic	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00028	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00020	0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.009	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.005	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.003	0.001	0.001
Iron	0.05	mg/L	3.7	1.6	0.64	0.66
Iron (filtered)	0.05	mg/L	0.34	< 0.05	0.54	0.53
Lead	0.001	mg/L	0.017	0.011	0.001	0.001
Lead (filtered)	0.001	mg/L	0.004	0.007	0.001	< 0.001
Manganese	0.005	mg/L	0.024	0.011	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.024	0.009	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0005	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	0.004	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.009	0.003	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.24	0.007	< 0.005	0.007
Zinc (filtered)	0.001	mg/L	0.24	0.007	0.004	0.007
Alkali Metals						
Calcium	0.5	mg/L	13	22	3.6	3.6
Magnesium	0.5	mg/L	61	120	8.3	8.4
Potassium	0.5	mg/L	10	12	1.1	1.0
Sodium	0.5	mg/L	470	700	64	65
Pathogens						
E.coli	1	MPN/100mL	-	-	390	360
Thermotolerant Coliforms	1	MPN/100mL	-	-	390	550

Client Sample ID			M01 SWL17_3	M01 SWL19_1	M01 SWL19_2	M01 SWL19_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17286	M16-Au17287	M16-Au17288	M16-Au17289
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	65	< 10	< 10	< 10
Chloride	1	mg/L	130	700	710	780
Conductivity (at 25°C)	1	uS/cm	510	2400	2400	2700
pH	0.1	pH Units	3.7	6.4	6.4	6.4
Phosphate total (as P)	0.05	mg/L	< 0.05	0.07	0.07	0.14
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	40	21	20
Total Dissolved Solids	10	mg/L	^{Q19} 500	1400	1400	1600
Turbidity	1	NTU	< 1	< 1	1.7	9.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.11	< 0.01	< 0.01	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.1	< 0.2	0.4	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.2	< 0.2	0.4	0.8
Total Nitrogen (as N)	0.2	mg/L	2.2	< 0.2	0.4	0.8
Heavy Metals						
Aluminium	0.05	mg/L	0.97	0.09	0.13	0.11
Aluminium (filtered)	0.05	mg/L	0.85	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.64	0.12	0.53	1.2
Iron (filtered)	0.05	mg/L	0.51	0.05	0.06	0.44
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.007	0.026
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.023
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	0.003	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	0.003	0.003
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.006	0.008
Zinc (filtered)	0.001	mg/L	0.002	0.004	0.005	0.008

Client Sample ID			M01 SWL17_3	M01 SWL19_1	M01 SWL19_2	M01 SWL19_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au17286	M16-Au17287	M16-Au17288	M16-Au17289
Date Sampled			Aug 15, 2016	Aug 15, 2016	Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	3.5	12	12	11
Magnesium	0.5	mg/L	8.2	44	44	48
Potassium	0.5	mg/L	1.0	5.8	6.2	6.2
Sodium	0.5	mg/L	64	370	370	430
Pathogens						
E.coli	1	MPN/100mL	340	M ¹⁵ <10	M ¹⁵ <10	96
Thermotolerant Coliforms	1	MPN/100mL	630	M ¹⁵ <10	10	190

Client Sample ID			QC162	QC163
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Au17290	M16-Au17291
Date Sampled			Aug 15, 2016	Aug 15, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 18, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 18, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 18, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 18, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 18, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 18, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 18, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 18, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 22, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 18, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 25, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 25, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 25, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 25, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 25, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 25, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 19, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 19, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 19, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 18, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Aug 18, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Aug 18, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	106			70-130	Pass	
Chloride	%	106			70-130	Pass	
Phosphate total (as P)	%	111			70-130	Pass	
Phosphorus reactive (as P)	%	110			70-130	Pass	
Sulphate (as S)	%	109			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	101			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	108			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	103			70-130	Pass	
Nitrate & Nitrite (as N)	%	103			70-130	Pass	
Nitrate (as N)	%	103			70-130	Pass	
Nitrite (as N)	%	104			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	77			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	105			80-120	Pass	
Aluminium (filtered)	%	105			80-120	Pass	
Arsenic	%	88			80-120	Pass	
Arsenic (filtered)	%	88			80-120	Pass	
Cadmium	%	89			70-130	Pass	
Cadmium (filtered)	%	89			70-130	Pass	
Chromium	%	88			80-120	Pass	
Chromium (filtered)	%	88			80-120	Pass	
Copper	%	89			80-120	Pass	
Copper (filtered)	%	89			80-120	Pass	
Iron	%	88			80-120	Pass	
Iron (filtered)	%	88			80-120	Pass	
Lead	%	88			80-120	Pass	
Lead (filtered)	%	88			80-120	Pass	
Manganese	%	88			80-120	Pass	
Manganese (filtered)	%	88			80-120	Pass	
Mercury	%	90			75-125	Pass	
Mercury (filtered)	%	90			70-130	Pass	
Nickel	%	88			80-120	Pass	
Nickel (filtered)	%	88			80-120	Pass	
Selenium	%	93			80-120	Pass	
Selenium (filtered)	%	93			80-120	Pass	
Zinc	%	89			80-120	Pass	
Zinc (filtered)	%	89			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	95			70-130	Pass	
Magnesium	%	101			70-130	Pass	
Potassium	%	88			70-130	Pass	
Sodium	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Au17456	NCP	%	111		70-130	Pass	
Phosphate total (as P)	M16-Au17274	CP	%	86		70-130	Pass	
Phosphorus reactive (as P)	M16-Au16174	NCP	%	73		70-130	Pass	
Sulphate (as S)	M16-Au17462	NCP	%	109		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Au17274	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au17274	CP	%	80		70-130	Pass	
Nitrate (as N)	M16-Au17274	CP	%	79		70-130	Pass	
Nitrite (as N)	M16-Au17274	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	S16-Au16529	NCP	%	94		75-125	Pass	
Arsenic (filtered)	M16-Au17117	NCP	%	88		70-130	Pass	
Cadmium	M16-Au16540	NCP	%	88		70-130	Pass	
Cadmium (filtered)	S16-Au18833	NCP	%	103		70-130	Pass	
Chromium	S16-Au16529	NCP	%	84		75-125	Pass	
Chromium (filtered)	M16-Au17117	NCP	%	87		70-130	Pass	
Copper	S16-Au16529	NCP	%	87		75-125	Pass	
Copper (filtered)	M16-Au17117	NCP	%	82		70-130	Pass	
Iron	S16-Au17900	NCP	%	88		75-125	Pass	
Iron (filtered)	M16-Au18581	NCP	%	87		70-130	Pass	
Lead	S16-Au16529	NCP	%	89		75-125	Pass	
Lead (filtered)	M16-Au17117	NCP	%	82		70-130	Pass	
Manganese	S16-Au16529	NCP	%	79		75-125	Pass	
Manganese (filtered)	M16-Au18581	NCP	%	76		70-130	Pass	
Mercury	S16-Au16529	NCP	%	97		70-130	Pass	
Mercury (filtered)	M16-Au17117	NCP	%	80		70-130	Pass	
Nickel	S16-Au17900	NCP	%	86		75-125	Pass	
Nickel (filtered)	M16-Au18547	NCP	%	87		70-130	Pass	
Selenium	S16-Au16529	NCP	%	100		75-125	Pass	
Selenium (filtered)	M16-Au17117	NCP	%	96		70-130	Pass	
Zinc	B16-Au21252	NCP	%	88		75-125	Pass	
Zinc (filtered)	M16-Au18547	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Au17275	CP	%	77		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Au17275	CP	%	94		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au17275	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-Au17275	CP	%	91		70-130	Pass	
Nitrite (as N)	M16-Au17275	CP	%	99		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Au17276	CP	%	95		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Au17277	CP	%	91		70-130	Pass	
Magnesium	M16-Au17277	CP	%	93		70-130	Pass	
Potassium	M16-Au17277	CP	%	84		70-130	Pass	
Sodium	M16-Au17277	CP	%	90		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17285	CP	%	83			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au17285	CP	%	122			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Au17287	CP	%	90			70-130	Pass	
Magnesium	M16-Au17287	CP	%	94			70-130	Pass	
Potassium	M16-Au17287	CP	%	84			70-130	Pass	
Sodium	M16-Au17287	CP	%	105			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au17456	NCP	mg/L	74	79	6.3	30%	Pass	
Conductivity (at 25°C)	M16-Au17274	CP	uS/cm	150	150	1.0	30%	Pass	
pH	M16-Au17274	CP	pH Units	6.6	6.7	pass	30%	Pass	
Phosphate total (as P)	M16-Au15945	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-Au17456	NCP	mg/L	30	30	1.8	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17274	CP	mg/L	35	33	5.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au17274	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au17274	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au17274	CP	mg/L	35	33	5.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au17274	CP	mg/L	0.02	0.02	10	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au17274	CP	mg/L	3.4	3.4	<1	30%	Pass	
Nitrate (as N)	M16-Au17274	CP	mg/L	3.4	3.4	<1	30%	Pass	
Nitrite (as N)	M16-Au17274	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Au16529	NCP	mg/L	0.014	0.014	1.0	30%	Pass	
Arsenic (filtered)	M16-Au17117	NCP	mg/L	0.069	0.063	9.0	30%	Pass	
Cadmium	M16-Au16539	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-Au18832	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	S16-Au16529	NCP	mg/L	0.075	0.075	<1	30%	Pass	
Chromium (filtered)	M16-Au17117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S16-Au16529	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Au17117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Au20263	NCP	mg/L	0.47	0.49	4.0	30%	Pass	
Iron (filtered)	M16-Au18581	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S16-Au16529	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Au17117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	S16-Au16529	NCP	mg/L	0.14	0.14	1.0	30%	Pass	
Manganese (filtered)	M16-Au17117	NCP	mg/L	0.23	0.21	7.0	30%	Pass	
Mercury	S16-Au16529	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Au17117	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S16-Au17900	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Au17274	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S16-Au16529	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Au17117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	B16-Au21252	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M16-Au17274	CP	mg/L	0.027	0.025	7.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au17275	CP	mg/L	38	40	6.0	30%	Pass
Total Dissolved Solids	M16-Au17275	CP	mg/L	120	120	3.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au17275	CP	mg/L	0.40	0.40	1.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au17275	CP	mg/L	0.09	0.09	1.0	30%	Pass
Nitrate (as N)	M16-Au17275	CP	mg/L	0.09	0.09	1.0	30%	Pass
Nitrite (as N)	M16-Au17275	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au17277	CP	mg/L	16	15	5.0	30%	Pass
Magnesium	M16-Au17277	CP	mg/L	7.1	6.8	5.0	30%	Pass
Potassium	M16-Au17277	CP	mg/L	10	8.9	15	30%	Pass
Sodium	M16-Au17277	CP	mg/L	46	44	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au17278	CP	mg/L	300	270	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au17279	CP	uS/cm	200	200	1.0	30%	Pass
pH	M16-Au17279	CP	pH Units	4.4	4.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17279	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au17279	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au17279	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au17279	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Au17281	CP	mg/L	1.6	1.9	17	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Au17282	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au17283	CP	uS/cm	4900	4900	<1	30%	Pass
pH	M16-Au17283	CP	pH Units	4.8	4.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17283	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au17283	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au17283	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au17283	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au17284	CP	uS/cm	540	540	<1	30%	Pass
pH	M16-Au17284	CP	pH Units	3.7	3.7	pass	30%	Pass
Total Dissolved Solids	M16-Au17284	CP	mg/L	510	480	5.0	30%	Pass
Turbidity	M16-Au17284	CP	NTU	1.1	1.2	6.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17284	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au17284	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au17284	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au17284	CP	mg/L	< 20	< 20	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Zinc (filtered)	M16-Au17284	CP	mg/L	0.004	0.004	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au17285	CP	mg/L	510	480	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au17286	CP	mg/L	500	450	11	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au17287	CP	mg/L	12	11	5.0	30%	Pass
Magnesium	M16-Au17287	CP	mg/L	44	43	4.0	30%	Pass
Potassium	M16-Au17287	CP	mg/L	5.8	6.5	11	30%	Pass
Sodium	M16-Au17287	CP	mg/L	370	360	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au17289	CP	uS/cm	2700	2700	<1	30%	Pass
pH	M16-Au17289	CP	pH Units	6.4	6.4	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17289	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au17289	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au17289	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au17289	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Au17697	NCP	mg/L	0.68	0.67	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M01	Microbiological Testing performed outside the recommended holding time
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 19, 2016 8:20 AM**
Eurofins | mgt reference: **512409**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **512409-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Aug 19, 2016**

Client Sample ID			MW45	MW46	MW47	MW33
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18340	M16-Au18341	M16-Au18342	M16-Au18343
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	10	29	< 10	97
Chloride	1	mg/L	470	1600	490	170
Conductivity (at 25°C)	1	uS/cm	1800	5600	2200	770
pH	0.1	pH Units	7.6	7.4	7.9	5.7
Phosphate total (as P)	0.05	mg/L	0.20	0.23	0.42	0.77
Phosphorus reactive (as P)	0.05	mg/L	0.05	< 0.05	0.05	0.63
Sulphate (as S)	5	mg/L	5.3	55	15	18
Total Dissolved Solids	10	mg/L	990	3100	1300	^{Q19} 980
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	230	330	260	50
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	230	330	260	50
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.20	0.45	0.05	0.24
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.08	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.08	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 1	< 1	< 1	12
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	^{G01} < 1	^{G01} < 1	^{G01} < 1	12
Total Nitrogen (as N)	0.2	mg/L	< 1	< 1	< 1	12
Heavy Metals						
Aluminium	0.05	mg/L	0.86	3.2	8.2	3.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.4
Arsenic	0.001	mg/L	0.003	0.002	0.008	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.007	0.021	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	0.006	0.004	0.008
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Iron	0.05	mg/L	3.5	6.3	8.8	2.7
Iron (filtered)	0.05	mg/L	< 0.05	0.09	< 0.05	0.78
Lead	0.001	mg/L	0.002	0.005	0.015	0.004

Client Sample ID			MW45 Water	MW46 Water	MW47 Water	MW33 Water
Sample Matrix			M16-Au18340	M16-Au18341	M16-Au18342	M16-Au18343
Eurofins mgt Sample No.			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Manganese	0.005	mg/L	< 0.005	0.030	0.024	0.017
Manganese (filtered)	0.005	mg/L	< 0.005	0.027	< 0.005	0.017
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.005	0.014	0.004
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.003
Selenium	0.001	mg/L	< 0.001	0.003	0.004	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.37	0.028	0.048
Zinc (filtered)	0.001	mg/L	< 0.001	0.045	0.002	0.046
Alkali Metals						
Calcium	0.5	mg/L	60	140	45	47
Magnesium	0.5	mg/L	37	130	36	10
Potassium	0.5	mg/L	4.6	6.4	3.4	26
Sodium	0.5	mg/L	240	740	310	83

Client Sample ID			MW34 Water	MW35 Water	SWL15_1 Water	SWL15_2 Water
Sample Matrix			M16-Au18344	M16-Au18345	M16-Au18346	M16-Au18347
Eurofins mgt Sample No.			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	68	110	21	18
Chloride	1	mg/L	61	71	98	110
Conductivity (at 25°C)	1	uS/cm	250	350	380	410
pH	0.1	pH Units	5.0	3.9	6.1	6.5
Phosphate total (as P)	0.05	mg/L	1.5	0.52	0.17	0.12
Phosphorus reactive (as P)	0.05	mg/L	1.2	0.26	0.08	0.09
Sulphate (as S)	5	mg/L	8.4	15	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 410	^{Q19} 490	^{Q19} 360	^{Q19} 420
Turbidity	1	NTU	-	-	1.3	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	26	37
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	26	37
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.12	0.16	0.08	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	5.8	5.9	3.3	4.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.9	6.1	3.4	4.1
Total Nitrogen (as N)	0.2	mg/L	5.9	6.1	3.4	4.1

Client Sample ID			MW34	MW35	SWL15_1	SWL15_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18344	M16-Au18345	M16-Au18346	M16-Au18347
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	2.2	0.67	0.44	0.59
Aluminium (filtered)	0.05	mg/L	0.83	0.41	0.43	0.46
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00005	0.00008
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00006	0.00006
Chromium	0.001	mg/L	0.003	0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.003	0.003	0.003
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.003
Iron	0.05	mg/L	1.3	0.28	0.31	1.1
Iron (filtered)	0.05	mg/L	0.92	0.22	0.27	0.45
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.009	0.011
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.009	0.006
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	< 0.005	0.020	0.020
Zinc (filtered)	0.001	mg/L	0.004	0.003	0.017	0.016
Alkali Metals						
Calcium	0.5	mg/L	9.9	13	17	24
Magnesium	0.5	mg/L	5.4	6.8	7.5	7.8
Potassium	0.5	mg/L	11	8.8	0.9	1.0
Sodium	0.5	mg/L	30	37	48	50
Pathogens						
E.coli	1	MPN/100mL	-	-	160	250
Thermotolerant Coliforms	1	MPN/100mL	-	-	>24000	24000

Client Sample ID			SWL16_1	SWL16_2	SWL16_3	SWL18_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18348	M16-Au18349	M16-Au18350	M16-Au18351
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	25	15	13	11
Chloride	1	mg/L	120	93	98	370
Conductivity (at 25°C)	1	uS/cm	610	420	520	1300
pH	0.1	pH Units	6.5	6.7	7.2	7.2
Phosphate total (as P)	0.05	mg/L	1.2	0.69	0.84	0.41
Phosphorus reactive (as P)	0.05	mg/L	1.2	0.68	0.82	0.39
Sulphate (as S)	5	mg/L	16	5.6	10	10
Total Dissolved Solids	10	mg/L	^{Q19} 460	^{Q19} 330	^{Q19} 390	770
Turbidity	1	NTU	< 1	3.7	38	5.7

Client Sample ID			SWL16_1	SWL16_2	SWL16_3	SWL18_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18348	M16-Au18349	M16-Au18350	M16-Au18351
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	47	34	69	53
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	47	34	69	53
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.05	0.05	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.34	0.71	0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.30	0.66	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.04	0.05	0.03
Organic Nitrogen (as N)	0.2	mg/L	2.7	2.6	3.0	2.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.7	2.7	3.1	2.7
Total Nitrogen (as N)	0.2	mg/L	2.7	3.0	3.8	2.8
Heavy Metals						
Aluminium	0.05	mg/L	0.19	0.36	0.95	0.31
Aluminium (filtered)	0.05	mg/L	0.17	0.31	0.25	0.13
Arsenic	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	0.003	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.002	0.002
Iron	0.05	mg/L	0.29	0.93	1.5	1.2
Iron (filtered)	0.05	mg/L	0.23	0.81	0.76	0.74
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.006	0.011	0.020
Manganese (filtered)	0.005	mg/L	< 0.005	0.006	0.007	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.009	0.015	0.012
Zinc (filtered)	0.001	mg/L	0.005	0.009	0.008	0.009
Alkali Metals						
Calcium	0.5	mg/L	22	15	23	20
Magnesium	0.5	mg/L	12	7.6	10	25
Potassium	0.5	mg/L	21	10	16	6.3
Sodium	0.5	mg/L	60	47	46	180
Pathogens						
E.coli	1	MPN/100mL	1100	340	350	11000
Thermotolerant Coliforms	1	MPN/100mL	1700	730	1500	13000

Client Sample ID			SWL18_2	SWL18_3	QC167	QC168
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18352	M16-Au18353	M16-Au18354	M16-Au18355
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	10	-	-
Chloride	1	mg/L	380	380	-	-
Conductivity (at 25°C)	1	uS/cm	1300	1400	-	-
pH	0.1	pH Units	7.1	7.1	-	-
Phosphate total (as P)	0.05	mg/L	0.40	0.37	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.37	0.33	-	-
Sulphate (as S)	5	mg/L	10	10	-	-
Total Dissolved Solids	10	mg/L	790	810	-	-
Turbidity	1	NTU	7.3	5.7	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	53	54	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	53	54	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.03	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.07	0.05	-	-
Nitrate (as N)	0.02	mg/L	0.07	0.03	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	-	-
Organic Nitrogen (as N)	0.2	mg/L	2.7	2.7	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.7	2.7	-	-
Total Nitrogen (as N)	0.2	mg/L	2.8	2.8	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.33	0.31	-	-
Aluminium (filtered)	0.05	mg/L	0.12	0.12	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00006	0.00006	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.003	-	-
Copper (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	1.3	1.2	-	-
Iron (filtered)	0.05	mg/L	0.78	0.81	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.021	0.020	-	-
Manganese (filtered)	0.005	mg/L	0.011	0.011	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	-	-
Nickel (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	0.012	-	-
Zinc (filtered)	0.001	mg/L	0.010	0.010	< 0.001	< 0.001

Client Sample ID			SWL18_2	SWL18_3	QC167	QC168
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au18352	M16-Au18353	M16-Au18354	M16-Au18355
Date Sampled			Aug 18, 2016	Aug 18, 2016	Aug 18, 2016	Aug 18, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	19	19	-	-
Magnesium	0.5	mg/L	26	26	-	-
Potassium	0.5	mg/L	6.6	5.5	-	-
Sodium	0.5	mg/L	190	190	-	-
Pathogens						
E.coli	1	MPN/100mL	10000	12000	-	-
Thermotolerant Coliforms	1	MPN/100mL	>24000	16000	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 19, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 19, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 19, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 19, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 19, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 19, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 19, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 19, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 22, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 19, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 22, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 22, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 22, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 22, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 22, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 22, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 19, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 22, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 22, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 19, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Aug 19, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Aug 19, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	106			70-130	Pass		
Chloride	%	110			70-130	Pass		
Phosphate total (as P)	%	121			70-130	Pass		
Phosphorus reactive (as P)	%	117			70-130	Pass		
Sulphate (as S)	%	116			70-130	Pass		
Total Dissolved Solids	%	96			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	110			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	113			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	93			70-130	Pass		
Nitrate & Nitrite (as N)	%	97			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	82			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	80			80-120	Pass		
Aluminium (filtered)	%	80			80-120	Pass		
Arsenic	%	90			80-120	Pass		
Arsenic (filtered)	%	92			80-120	Pass		
Chromium	%	90			80-120	Pass		
Chromium (filtered)	%	90			80-120	Pass		
Copper	%	89			80-120	Pass		
Copper (filtered)	%	88			80-120	Pass		
Iron	%	88			80-120	Pass		
Iron (filtered)	%	88			80-120	Pass		
Lead	%	89			80-120	Pass		
Lead (filtered)	%	88			80-120	Pass		
Manganese	%	90			80-120	Pass		
Manganese (filtered)	%	90			80-120	Pass		
Mercury	%	96			75-125	Pass		
Mercury (filtered)	%	93			70-130	Pass		
Nickel	%	89			80-120	Pass		
Nickel (filtered)	%	88			80-120	Pass		
Selenium	%	94			80-120	Pass		
Selenium (filtered)	%	97			80-120	Pass		
Zinc	%	90			80-120	Pass		
Zinc (filtered)	%	91			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	103			70-130	Pass		
Magnesium	%	111			70-130	Pass		
Potassium	%	102			70-130	Pass		
Sodium	%	103			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	B16-Au17627	NCP	%	78		70-130	Pass	
Phosphorus reactive (as P)	M16-Au18340	CP	%	98		70-130	Pass	
Sulphate (as S)	M16-Au18279	NCP	%	100		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Au19917	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Au18465	NCP	%	94		75-125	Pass	
Arsenic (filtered)	M16-Au20586	NCP	%	88		70-130	Pass	
Cadmium	S16-Au18774	NCP	%	89		70-130	Pass	
Cadmium (filtered)	S16-Au19841	NCP	%	97		70-130	Pass	
Chromium	M16-Au18465	NCP	%	89		75-125	Pass	
Chromium (filtered)	M16-Au20586	NCP	%	84		70-130	Pass	
Copper	M16-Au18465	NCP	%	88		75-125	Pass	
Copper (filtered)	M16-Au20586	NCP	%	81		70-130	Pass	
Iron	S16-Au17900	NCP	%	88		75-125	Pass	
Iron (filtered)	M16-Au18547	NCP	%	92		70-130	Pass	
Lead	M16-Au18465	NCP	%	87		75-125	Pass	
Lead (filtered)	M16-Au20586	NCP	%	81		70-130	Pass	
Manganese	M16-Au18465	NCP	%	91		75-125	Pass	
Manganese (filtered)	M16-Au18547	NCP	%	95		70-130	Pass	
Mercury	M16-Au18465	NCP	%	94		70-130	Pass	
Mercury (filtered)	M16-Au18547	NCP	%	80		70-130	Pass	
Nickel	M16-Au18465	NCP	%	88		75-125	Pass	
Nickel (filtered)	M16-Au18547	NCP	%	87		70-130	Pass	
Selenium	M16-Au18465	NCP	%	97		75-125	Pass	
Selenium (filtered)	M16-Au20586	NCP	%	91		70-130	Pass	
Zinc	M16-Au18465	NCP	%	90		75-125	Pass	
Zinc (filtered)	M16-Au20586	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Au18340	CP	%	114		70-130	Pass	
Magnesium	M16-Au18340	CP	%	115		70-130	Pass	
Potassium	M16-Au18340	CP	%	107		70-130	Pass	
Sodium	M16-Au18340	CP	%	113		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Au18341	CP	%	95		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Au18341	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au18341	CP	%	95		70-130	Pass	
Nitrate (as N)	M16-Au18341	CP	%	95		70-130	Pass	
Nitrite (as N)	M16-Au18341	CP	%	99		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Au18342	CP	%	98		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au18342	CP	%	103		70-130	Pass	
Nitrate (as N)	M16-Au18342	CP	%	103		70-130	Pass	
Nitrite (as N)	M16-Au18342	CP	%	112		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au17533	NCP	%	71		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au17533	NCP	%	126		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Au18350	CP	%	81		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Au18350	CP	%	91			70-130	Pass	
Magnesium	M16-Au18350	CP	%	102			70-130	Pass	
Potassium	M16-Au18350	CP	%	103			70-130	Pass	
Sodium	M16-Au18350	CP	%	104			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Au18351	CP	%	104			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Au18352	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au18352	CP	%	91			70-130	Pass	
Nitrate (as N)	M16-Au18352	CP	%	90			70-130	Pass	
Nitrite (as N)	M16-Au18352	CP	%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Au18340	CP	mg/L	10	12	19	30%	Pass	
Chloride	M16-Au18340	CP	mg/L	470	480	2.9	30%	Pass	
Conductivity (at 25°C)	M16-Au18340	CP	uS/cm	1800	1800	1.0	30%	Pass	
Phosphorus reactive (as P)	M16-Au18340	CP	mg/L	0.05	0.06	4.1	30%	Pass	
Sulphate (as S)	M16-Au18340	CP	mg/L	5.3	5.2	1.6	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au18340	CP	mg/L	230	220	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au18340	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au18340	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au18340	CP	mg/L	230	220	1.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Au19917	NCP	mg/L	0.4	0.4	1.3	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Au21167	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Aluminium (filtered)	B16-Au19301	NCP	mg/L	0.08	0.08	6.0	30%	Pass	
Arsenic	M16-Au18465	NCP	mg/L	0.005	0.004	5.0	30%	Pass	
Arsenic (filtered)	M16-Au20586	NCP	mg/L	0.003	0.003	1.0	30%	Pass	
Cadmium	S16-Au18773	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-Au19840	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Au18465	NCP	mg/L	0.031	0.031	2.0	30%	Pass	
Chromium (filtered)	M16-Au20586	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Au18465	NCP	mg/L	0.006	0.006	7.0	30%	Pass	
Copper (filtered)	M16-Au20586	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Au18465	NCP	mg/L	2.5	2.6	1.0	30%	Pass	
Iron (filtered)	M16-Au20586	NCP	mg/L	0.06	0.06	8.0	30%	Pass	
Lead	M16-Au18465	NCP	mg/L	0.021	0.021	1.0	30%	Pass	
Lead (filtered)	M16-Au20586	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Au18465	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-Au20586	NCP	mg/L	3.5	3.2	6.0	30%	Pass	
Mercury	M16-Au18465	NCP	mg/L	0.0001	0.0002	13	30%	Pass	
Mercury (filtered)	M16-Au20586	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au18465	NCP	mg/L	0.003	0.003	6.0	30%	Pass	
Nickel (filtered)	M16-Au20586	NCP	mg/L	0.21	0.19	8.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Selenium	M16-Au18465	NCP	mg/L	0.003	0.003	7.0	30%	Pass
Selenium (filtered)	M16-Au20586	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Au18465	NCP	mg/L	0.018	0.018	1.0	30%	Pass
Zinc (filtered)	M16-Au20586	NCP	mg/L	0.008	0.008	9.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au18340	CP	mg/L	60	60	1.0	30%	Pass
Magnesium	M16-Au18340	CP	mg/L	37	36	3.0	30%	Pass
Potassium	M16-Au18340	CP	mg/L	4.6	4.7	3.0	30%	Pass
Sodium	M16-Au18340	CP	mg/L	240	220	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au18341	CP	mg/L	29	27	8.0	30%	Pass
Total Dissolved Solids	M16-Au18341	CP	mg/L	3100	3100	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au18341	CP	mg/L	0.45	0.44	1.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au18341	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Au18341	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Au18341	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au18342	CP	mg/L	0.05	0.05	5.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au18342	CP	mg/L	0.08	0.08	2.0	30%	Pass
Nitrate (as N)	M16-Au18342	CP	mg/L	0.08	0.08	2.0	30%	Pass
Nitrite (as N)	M16-Au18342	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Au18343	CP	mg/L	0.77	0.86	12	30%	Pass
Total Dissolved Solids	M16-Au18343	CP	mg/L	980	1000	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au18344	CP	mg/L	410	420	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au18345	CP	mg/L	490	490	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au18346	CP	mg/L	360	390	10	30%	Pass
Turbidity	M16-Au18346	CP	NTU	1.3	1.2	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au18347	CP	uS/cm	410	410	<1	30%	Pass
pH	M16-Au18347	CP	pH Units	6.5	6.5	pass	30%	Pass
Total Dissolved Solids	M16-Au18347	CP	mg/L	420	540	25	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au18347	CP	mg/L	37	38	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au18347	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au18347	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au18347	CP	mg/L	37	38	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au18350	CP	mg/L	13	12	9.0	30%	Pass
Phosphorus reactive (as P)	M16-Au18350	CP	mg/L	0.82	0.86	4.3	30%	Pass

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au18350	CP	mg/L	23	23	1.0	30%	Pass
Magnesium	M16-Au18350	CP	mg/L	10	10	1.0	30%	Pass
Potassium	M16-Au18350	CP	mg/L	16	17	2.0	30%	Pass
Sodium	M16-Au18350	CP	mg/L	46	46	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Au18351	CP	mg/L	370	380	1.6	30%	Pass
Sulphate (as S)	M16-Au18351	CP	mg/L	10	10	1.7	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au18352	CP	mg/L	0.04	0.04	5.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au18352	CP	mg/L	0.07	0.06	17	30%	Pass
Nitrate (as N)	M16-Au18352	CP	mg/L	0.07	0.06	17	30%	Pass
Nitrite (as N)	M16-Au18352	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 22, 2016 7:55 AM**
Eurofins | mgt reference: **512593**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

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 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **512593-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Aug 22, 2016**

Client Sample ID			MW22	MW23	MW24	MW25
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au19848	M16-Au19849	M16-Au19850	M16-Au19851
Date Sampled			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	160	30	46	36
Chloride	1	mg/L	64	53	120	56
Conductivity (at 25°C)	1	uS/cm	540	350	540	320
pH	0.1	pH Units	3.6	6.3	4.5	5.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	58	15	13	10
Total Dissolved Solids	10	mg/L	350	240	^{Q19} 360	220
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	44	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	44	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.20	< 0.01	0.16	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	0.14	4.0	0.64	11
Nitrate (as N)	0.02	mg/L	0.11	4.0	0.63	11
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.6	0.7	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.9	1.3
Total Nitrogen (as N)	0.2	mg/L	0.5	4.6	1.5	12
Heavy Metals						
Aluminium	0.05	mg/L	15	2.2	3.0	18
Aluminium (filtered)	0.05	mg/L	14	0.20	1.0	0.44
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00006	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.002	0.004	0.012
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.002	0.007
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	29	0.12	0.31	2.3
Iron (filtered)	0.05	mg/L	26	< 0.05	0.12	< 0.05
Lead	0.001	mg/L	0.004	< 0.001	0.002	0.022

Client Sample ID			MW22 Water	MW23 Water	MW24 Water	MW25 Water
Sample Matrix			M16-Au19848	M16-Au19849	M16-Au19850	M16-Au19851
Eurofins mgt Sample No.			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.057
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.023	0.001	0.002	0.005
Nickel (filtered)	0.001	mg/L	0.023	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.021
Zinc (filtered)	0.001	mg/L	0.003	0.002	0.002	0.004
Alkali Metals						
Calcium	0.5	mg/L	8.9	25	5.7	7.9
Magnesium	0.5	mg/L	6.1	5.2	12	11
Potassium	0.5	mg/L	1.2	5.2	1.6	5.1
Sodium	0.5	mg/L	30	33	58	29

Client Sample ID			MW26 Water	MW27 Water	MW29 Water	MW30 Water
Sample Matrix			M16-Au19852	M16-Au19853	M16-Au19854	M16-Au19855
Eurofins mgt Sample No.			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity						
Acidity (as CaCO ₃)	10	mg/L	10	39	31	11
Chloride	1	mg/L	18	35	50	28
Conductivity (at 25°C)	1	uS/cm	78	310	310	150
pH	0.1	pH Units	4.8	3.8	4.9	6.2
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	14	20	< 5
Total Dissolved Solids	10	mg/L	52	^{Q19} 200	^{Q19} 220	^{Q19} 110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.24	0.20	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.44	< 0.05	< 0.05	2.2
Nitrate (as N)	0.02	mg/L	0.43	< 0.02	< 0.02	2.2
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 1	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	^{G01} < 1	0.7
Total Nitrogen (as N)	0.2	mg/L	0.4	0.3	< 1	2.9

Client Sample ID			MW26 Water	MW27 Water	MW29 Water	MW30 Water
Sample Matrix			M16-Au19852	M16-Au19853	M16-Au19854	M16-Au19855
Eurofins mgt Sample No.			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.69	0.94	1.7	0.49
Aluminium (filtered)	0.05	mg/L	0.35	0.79	0.98	0.44
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.0094
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.002	0.004
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.004
Iron	0.05	mg/L	0.14	1.4	0.43	0.07
Iron (filtered)	0.05	mg/L	0.05	0.97	0.26	0.06
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.008	< 0.005	^{R14} 0.018
Zinc (filtered)	0.001	mg/L	0.003	0.007	0.001	^{R14} 0.033
Alkali Metals						
Calcium	0.5	mg/L	1.3	5.0	6.5	8.4
Magnesium	0.5	mg/L	1.4	8.8	12	2.5
Potassium	0.5	mg/L	1.8	4.1	1.9	< 0.5
Sodium	0.5	mg/L	11	22	41	17

Client Sample ID			MW31 Water	MW32 Water	QC169 Water	QC170 Water
Sample Matrix			M16-Au19856	M16-Au19857	M16-Au19858	M16-Au19859
Eurofins mgt Sample No.			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	69	31	-	-
Chloride	1	mg/L	68	190	-	-
Conductivity (at 25°C)	1	uS/cm	420	750	-	-
pH	0.1	pH Units	4.6	5.6	-	-
Phosphate total (as P)	0.05	mg/L	1.1	0.80	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.99	0.70	-	-
Sulphate (as S)	5	mg/L	12	11	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 540	^{Q19} 540	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-

Client Sample ID			MW31	MW32	QC169	QC170
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au19856	M16-Au19857	M16-Au19858	M16-Au19859
Date Sampled			Aug 19, 2016	Aug 19, 2016	Aug 19, 2016	Aug 19, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.31	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	7.4	2.7	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	7.5	3.0	-	-
Total Nitrogen (as N)	0.2	mg/L	7.5	3.0	-	-
Heavy Metals						
Aluminium	0.05	mg/L	2.7	1.1	-	-
Aluminium (filtered)	0.05	mg/L	2.7	0.88	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.002	-	-
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	-	-
Copper (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.44	0.42	-	-
Iron (filtered)	0.05	mg/L	0.44	0.35	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	12	11	-	-
Magnesium	0.5	mg/L	6.9	9.6	-	-
Potassium	0.5	mg/L	7.5	9.6	-	-
Sodium	0.5	mg/L	42	92	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 23, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 22, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 23, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 22, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 22, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 22, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 23, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 23, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 23, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 23, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 23, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 23, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 25, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 22, 2016	180 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	124			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	121			70-130	Pass		
Phosphate total (as P)	%	105			70-130	Pass		
Phosphorus reactive (as P)	%	115			70-130	Pass		
Sulphate (as S)	%	126			70-130	Pass		
Total Dissolved Solids	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	95			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	111			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate & Nitrite (as N)	%	97			70-130	Pass		
Nitrate (as N)	%	97			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	76			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	103			80-120	Pass		
Aluminium (filtered)	%	89			80-120	Pass		
Arsenic	%	93			80-120	Pass		
Arsenic (filtered)	%	93			80-120	Pass		
Chromium	%	88			80-120	Pass		
Chromium (filtered)	%	88			80-120	Pass		
Copper	%	87			80-120	Pass		
Copper (filtered)	%	87			80-120	Pass		
Iron	%	88			80-120	Pass		
Iron (filtered)	%	88			80-120	Pass		
Lead	%	88			80-120	Pass		
Lead (filtered)	%	88			80-120	Pass		
Manganese	%	90			80-120	Pass		
Manganese (filtered)	%	90			80-120	Pass		
Mercury	%	86			75-125	Pass		
Mercury (filtered)	%	86			70-130	Pass		
Nickel	%	87			80-120	Pass		
Nickel (filtered)	%	87			80-120	Pass		
Selenium	%	91			80-120	Pass		
Selenium (filtered)	%	91			80-120	Pass		
Zinc	%	92			80-120	Pass		
Zinc (filtered)	%	92			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	87			70-130	Pass		
Magnesium	%	87			70-130	Pass		
Potassium	%	83			70-130	Pass		
Sodium	%	80			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Au19848	CP	%	90		70-130	Pass	
Sulphate (as S)	M16-Au19848	CP	%	107		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Au19908	NCP	%	109		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Alkalinity (as CaCO ₃)	M16-Au19908	NCP	%	128		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Au19848	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au19848	CP	%	76		70-130	Pass	
Nitrate (as N)	M16-Au19848	CP	%	76		70-130	Pass	
Nitrite (as N)	M16-Au19848	CP	%	74		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	B16-Au20902	NCP	%	93		75-125	Pass	
Arsenic (filtered)	B16-Au20902	NCP	%	98		70-130	Pass	
Cadmium	S16-Au18774	NCP	%	89		70-130	Pass	
Chromium	B16-Au20902	NCP	%	80		75-125	Pass	
Chromium (filtered)	B16-Au20902	NCP	%	86		70-130	Pass	
Copper	B16-Au21269	NCP	%	89		75-125	Pass	
Copper (filtered)	B16-Au21256	NCP	%	90		70-130	Pass	
Iron (filtered)	B16-Au20902	NCP	%	89		70-130	Pass	
Lead	B16-Au21269	NCP	%	88		75-125	Pass	
Lead (filtered)	B16-Au21256	NCP	%	94		70-130	Pass	
Manganese	B16-Au20902	NCP	%	90		75-125	Pass	
Manganese (filtered)	B16-Au20902	NCP	%	93		70-130	Pass	
Mercury	B16-Au21269	NCP	%	90		70-130	Pass	
Mercury (filtered)	B16-Au20902	NCP	%	81		70-130	Pass	
Nickel	B16-Au21269	NCP	%	90		75-125	Pass	
Nickel (filtered)	B16-Au20902	NCP	%	81		70-130	Pass	
Selenium	B16-Au20902	NCP	%	88		75-125	Pass	
Selenium (filtered)	B16-Au20902	NCP	%	96		70-130	Pass	
Zinc	B16-Au21269	NCP	%	92		75-125	Pass	
Zinc (filtered)	B16-Au20902	NCP	%	82		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au19849	CP	%	75		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Au19849	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Au19850	CP	%	79		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Au19851	CP	%	105		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Au19855	CP	%	98		70-130	Pass	
Sulphate (as S)	M16-Au19855	CP	%	100		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Au19855	CP	%	92		70-130	Pass	
Magnesium	M16-Au19855	CP	%	95		70-130	Pass	
Potassium	M16-Au19855	CP	%	87		70-130	Pass	
Sodium	M16-Au19855	CP	%	87		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au19848	CP	mg/L	64	62	1.9	30%	Pass	
Conductivity (at 25°C)	M16-Au19848	CP	uS/cm	540	540	<1	30%	Pass	
pH	M16-Au19848	CP	pH Units	3.6	3.6	pass	30%	Pass	
Sulphate (as S)	M16-Au19848	CP	mg/L	58	61	4.2	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Au19848	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Au19848	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Au19848	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-Au19848	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au19848	CP	mg/L	0.20	0.18	10	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au19848	CP	mg/L	0.14	0.14	3.0	30%	Pass	
Nitrate (as N)	M16-Au19848	CP	mg/L	0.11	0.10	5.0	30%	Pass	
Nitrite (as N)	M16-Au19848	CP	mg/L	0.03	0.03	4.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Au19848	CP	mg/L	0.4	0.4	1.1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Arsenic	B16-Au20902	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Arsenic (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-Au18773	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	B16-Au20902	NCP	mg/L	0.31	0.31	<1	30%	Pass	
Iron (filtered)	B16-Au20902	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	B16-Au20902	NCP	mg/L	0.028	0.028	2.0	30%	Pass	
Manganese (filtered)	B16-Au20902	NCP	mg/L	0.027	0.027	<1	30%	Pass	
Mercury	B16-Au20902	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	B16-Au20902	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-Au20902	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	B16-Au20902	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	B16-Au20902	NCP	mg/L	0.002	0.002	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Au19850	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Au19850	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au19855	CP	mg/L	28	28	<1	30%	Pass	
Sulphate (as S)	M16-Au19855	CP	mg/L	< 5	< 5	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au19855	CP	mg/L	8.4	8.6	3.0	30%	Pass
Magnesium	M16-Au19855	CP	mg/L	2.5	2.6	5.0	30%	Pass
Potassium	M16-Au19855	CP	mg/L	< 0.5	0.8	49	30%	Fail
Sodium	M16-Au19855	CP	mg/L	17	18	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au19856	CP	mg/L	69	72	5.0	30%	Pass
Total Dissolved Solids	M16-Au19856	CP	mg/L	540	550	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R14	These results have been confirmed by repeat analysis

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 23, 2016 8:35 AM**
Eurofins | mgt reference: **512790**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING LABORATORY	Order No.: Report #: 512790 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Aug 23, 2016 8:35 AM Due: Aug 30, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogen (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Sydney Laboratory - NATA Site # 18217											X	X																																			
Brisbane Laboratory - NATA Site # 20794																																															
External Laboratory																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																										
1	MW13	Aug 22, 2016		Water	M16-Au21317	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW14	Aug 22, 2016		Water	M16-Au21318	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW15	Aug 22, 2016		Water	M16-Au21319	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW16	Aug 22, 2016		Water	M16-Au21320	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW17	Aug 22, 2016		Water	M16-Au21321	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW18	Aug 22, 2016		Water	M16-Au21322	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW19	Aug 22, 2016		Water	M16-Au21323	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW20	Aug 22, 2016		Water	M16-Au21324	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW21	Aug 22, 2016		Water	M16-Au21325	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	QC171	Aug 22, 2016		Water	M16-Au21326	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	QC172	Aug 22, 2016		Water	M16-Au21327			X		X		X					X		X		X		X			X		X		X														X			

Certificate of Analysis

Coffey Environments Pty Ltd WA
 Suite 2, 53 Burswood Road
 Burswood
 WA 6100



NATA Accredited
 Accreditation Number 1261
 Site Number 1254

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **512790-W**
 Project name NL_BASELINE GW_SW MONITORING LABORATORY
 Received Date Aug 23, 2016

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			M16-Au21317	M16-Au21318	M16-Au21319	M16-Au21320
Eurofins mgt Sample No.			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	38	34	26	49
Chloride	1	mg/L	48	47	42	52
Conductivity (at 25°C)	1	uS/cm	270	280	300	300
pH	0.1	pH Units	4.4	4.7	4.3	4.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	12	11	19	11
Total Dissolved Solids	10	mg/L	180	200	230	210
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.02	0.18	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.20	2.3	0.21	3.4
Nitrate (as N)	0.02	mg/L	0.19	2.3	0.21	3.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.4	0.2	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.4	0.4	1.0
Total Nitrogen (as N)	0.2	mg/L	0.5	2.7	0.6	4.4
Heavy Metals						
Aluminium	0.05	mg/L	15	34	10	7.2
Aluminium (filtered)	0.05	mg/L	2.3	0.55	0.39	4.7
Arsenic	0.001	mg/L	0.002	0.004	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.012	0.032	0.016	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.002
Copper	0.001	mg/L	0.001	0.002	0.006	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	11	9.0	16	1.1
Iron (filtered)	0.05	mg/L	0.84	0.32	0.70	0.36
Lead	0.001	mg/L	0.009	0.031	0.015	0.018
Lead (filtered)	0.001	mg/L	0.001	0.002	< 0.001	0.009

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			M16-Au21317	M16-Au21318	M16-Au21319	M16-Au21320
Eurofins mgt Sample No.			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	0.0003	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.003	0.002	0.003
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.003
Selenium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.025	< 0.005
Zinc (filtered)	0.001	mg/L	0.002	< 0.001	0.021	0.004
Alkali Metals						
Calcium	0.5	mg/L	4.2	13	7.0	7.2
Magnesium	0.5	mg/L	5.5	5.9	9.8	5.2
Potassium	0.5	mg/L	1.2	1.0	1.9	0.9
Sodium	0.5	mg/L	27	25	28	31

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M16-Au21321	M16-Au21322	M16-Au21323	M16-Au21324
Eurofins mgt Sample No.			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	39	39	510	60
Chloride	1	mg/L	59	30	96	72
Conductivity (at 25°C)	1	uS/cm	340	230	500	370
pH	0.1	pH Units	4.2	4.4	3.6	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.21	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	16	13	16	15
Total Dissolved Solids	10	mg/L	190	160	290	220
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.04	0.13	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.5	0.07	0.51
Nitrate (as N)	0.02	mg/L	0.04	1.5	0.07	0.50
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	< 0.2	1.4	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	< 0.2	1.5	0.3
Total Nitrogen (as N)	0.2	mg/L	0.4	1.5	1.6	0.8
Heavy Metals						
Aluminium	0.05	mg/L	6.2	26	210	9.8
Aluminium (filtered)	0.05	mg/L	3.3	1.1	11	8.6
Arsenic	0.001	mg/L	< 0.001	0.004	0.013	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M16-Au21321	M16-Au21322	M16-Au21323	M16-Au21324
Eurofins mgt Sample No.			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00007	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.008	0.025	0.27	0.002
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.003	0.048	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	3.4	10	2.2	0.94
Iron (filtered)	0.05	mg/L	0.62	0.15	< 0.05	0.63
Lead	0.001	mg/L	0.012	0.025	0.31	< 0.001
Lead (filtered)	0.001	mg/L	0.003	0.002	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.012	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0002	dil0.00257	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.007	0.057	0.006
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.009	0.006
Selenium	0.001	mg/L	< 0.001	0.002	0.024	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.044	0.007
Zinc (filtered)	0.001	mg/L	0.002	0.004	0.025	0.003
Alkali Metals						
Calcium	0.5	mg/L	6.1	6.2	5.4	0.6
Magnesium	0.5	mg/L	6.7	4.8	2.7	3.9
Potassium	0.5	mg/L	1.1	1.4	1.0	0.7
Sodium	0.5	mg/L	38	37	52	45

Client Sample ID			MW21 Water	QC171 Water	QC172 Water	QC173 Water
Sample Matrix			M16-Au21325	M16-Au21326	M16-Au21327	M16-Au21328
Eurofins mgt Sample No.			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	82	31	-	-
Chloride	1	mg/L	65	31	-	-
Conductivity (at 25°C)	1	uS/cm	410	240	-	-
pH	0.1	pH Units	4.3	4.4	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	21	14	-	-
Total Dissolved Solids	10	mg/L	240	200	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	-	-

Client Sample ID			MW21	QC171	QC172	QC173
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au21325	M16-Au21326	M16-Au21327	M16-Au21328
Date Sampled			Aug 22, 2016	Aug 22, 2016	Aug 22, 2016	Aug 22, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.04	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	2.5	1.6	-	-
Nitrate (as N)	0.02	mg/L	2.5	1.6	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.5	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.5	-	-
Total Nitrogen (as N)	0.2	mg/L	2.7	2.1	-	-
Heavy Metals						
Aluminium	0.05	mg/L	18	21	-	-
Aluminium (filtered)	0.05	mg/L	6.3	1.2	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.004	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.007	0.020	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.003	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	19	9.5	-	-
Iron (filtered)	0.05	mg/L	15	1.2	< 0.05	< 0.05
Lead	0.001	mg/L	0.004	0.023	-	-
Lead (filtered)	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0002	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.005	-	-
Nickel (filtered)	0.001	mg/L	0.004	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.001	mg/L	0.004	0.002	< 0.001	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	4.7	5.2	-	-
Magnesium	0.5	mg/L	6.1	5.7	-	-
Potassium	0.5	mg/L	2.0	1.3	-	-
Sodium	0.5	mg/L	40	38	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 24, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 24, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 24, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 24, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 24, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 29, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 24, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 24, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 24, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 25, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 25, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 25, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 25, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 25, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 25, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 24, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	100			70-130	Pass	
Chloride	%	116			70-130	Pass	
Phosphate total (as P)	%	92			70-130	Pass	
Phosphorus reactive (as P)	%	130			70-130	Pass	
Sulphate (as S)	%	121			70-130	Pass	
Total Dissolved Solids	%	98			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	103			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	110			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	94			70-130	Pass	
Nitrate & Nitrite (as N)	%	95			70-130	Pass	
Nitrate (as N)	%	95			70-130	Pass	
Nitrite (as N)	%	98			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	85			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	106			80-120	Pass	
Aluminium (filtered)	%	106			80-120	Pass	
Arsenic	%	88			80-120	Pass	
Arsenic (filtered)	%	88			80-120	Pass	
Cadmium	%	103			70-130	Pass	
Cadmium (filtered)	%	97			70-130	Pass	
Chromium	%	103			80-120	Pass	
Chromium (filtered)	%	99			80-120	Pass	
Copper	%	98			80-120	Pass	
Copper (filtered)	%	102			80-120	Pass	
Iron	%	97			80-120	Pass	
Iron (filtered)	%	95			80-120	Pass	
Lead	%	109			80-120	Pass	
Lead (filtered)	%	86			80-120	Pass	
Manganese	%	100			80-120	Pass	
Manganese (filtered)	%	95			80-120	Pass	
Mercury	%	85			75-125	Pass	
Mercury (filtered)	%	85			70-130	Pass	
Nickel	%	104			80-120	Pass	
Nickel (filtered)	%	87			80-120	Pass	
Selenium	%	91			80-120	Pass	
Selenium (filtered)	%	88			80-120	Pass	
Zinc	%	114			80-120	Pass	
Zinc (filtered)	%	89			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	87			70-130	Pass	
Magnesium	%	96			70-130	Pass	
Potassium	%	89			70-130	Pass	
Sodium	%	89			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Au21977	NCP	%	96		70-130	Pass	
Phosphorus reactive (as P)	M16-Au21317	CP	%	80		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Au21976	NCP	%	92		70-130	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Au22246	NCP	%	75		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Au22246	NCP	%	128		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Au21042	NCP	%	90		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Au21672	NCP	%	94		75-125	Pass	
Arsenic (filtered)	M16-Au21098	NCP	%	100		70-130	Pass	
Cadmium	S16-Au21728	NCP	%	104		70-130	Pass	
Cadmium (filtered)	S16-Au26537	NCP	%	96		70-130	Pass	
Chromium	M16-Au21672	NCP	%	91		75-125	Pass	
Chromium (filtered)	M16-Au21098	NCP	%	91		70-130	Pass	
Copper	M16-Au21672	NCP	%	89		75-125	Pass	
Copper (filtered)	M16-Au21098	NCP	%	87		70-130	Pass	
Iron (filtered)	M16-Au21098	NCP	%	97		70-130	Pass	
Lead	M16-Au21672	NCP	%	90		75-125	Pass	
Lead (filtered)	M16-Au21098	NCP	%	89		70-130	Pass	
Manganese	M16-Au21672	NCP	%	85		75-125	Pass	
Manganese (filtered)	M16-Au21098	NCP	%	99		70-130	Pass	
Mercury	M16-Au21672	NCP	%	95		70-130	Pass	
Mercury (filtered)	M16-Au21098	NCP	%	88		70-130	Pass	
Nickel	M16-Au21672	NCP	%	89		75-125	Pass	
Nickel (filtered)	M16-Au21098	NCP	%	89		70-130	Pass	
Selenium	M16-Au21097	NCP	%	96		75-125	Pass	
Selenium (filtered)	M16-Au21098	NCP	%	103		70-130	Pass	
Zinc	M16-Au21672	NCP	%	91		75-125	Pass	
Zinc (filtered)	M16-Au21098	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Au21318	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au21318	CP	%	84		70-130	Pass	
Nitrate (as N)	M16-Au21318	CP	%	84		70-130	Pass	
Nitrite (as N)	M16-Au21318	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Au21318	CP	%	90		70-130	Pass	
Magnesium	M16-Au21318	CP	%	93		70-130	Pass	
Potassium	M16-Au21318	CP	%	90		70-130	Pass	
Sodium	M16-Au21318	CP	%	92		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Au21319	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au21319	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-Au21319	CP	%	91		70-130	Pass	
Nitrite (as N)	M16-Au21319	CP	%	95		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Chloride	M16-Au21321	CP	%	79			70-130	Pass	
Sulphate (as S)	M16-Au21321	CP	%	92			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Au18465	NCP	mg/L	20		3.0	30%	Pass	
Arsenic	M16-Au21672	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Arsenic (filtered)	M16-Au21098	NCP	mg/L	0.001	0.001	6.0	30%	Pass	
Cadmium	M16-Au21027	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-Au20479	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Au21672	NCP	mg/L	0.002	0.001	16	30%	Pass	
Chromium (filtered)	M16-Au21098	NCP	mg/L	0.006	0.006	1.0	30%	Pass	
Copper	M16-Au21672	NCP	mg/L	0.002	0.001	28	30%	Pass	
Copper (filtered)	M16-Au21098	NCP	mg/L	0.007	0.007	1.0	30%	Pass	
Iron	S16-Au21416	NCP	mg/L	6.2	6.3	<1	30%	Pass	
Iron (filtered)	M16-Au21098	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Au21672	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Au21098	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Au21672	NCP	mg/L	0.071	0.072	1.0	30%	Pass	
Manganese (filtered)	M16-Au21098	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Au21672	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Au21098	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au21672	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Au21098	NCP	mg/L	0.001	0.001	4.0	30%	Pass	
Selenium	M16-Au21097	NCP	mg/L	< 0.001	0.001	20	30%	Pass	
Selenium (filtered)	M16-Au21098	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Au21672	NCP	mg/L	0.006	0.006	12	30%	Pass	
Zinc (filtered)	M16-Au21098	NCP	mg/L	0.003	0.003	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Au21318	CP	mg/L	200	210	6.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au21318	CP	mg/L	0.02	0.01	16	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au21318	CP	mg/L	2.3	2.4	1.0	30%	Pass	
Nitrate (as N)	M16-Au21318	CP	mg/L	2.3	2.4	1.0	30%	Pass	
Nitrite (as N)	M16-Au21318	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Au21318	CP	mg/L	13	13	2.0	30%	Pass	
Magnesium	M16-Au21318	CP	mg/L	5.9	6.2	4.0	30%	Pass	
Potassium	M16-Au21318	CP	mg/L	1.0	1.1	10	30%	Pass	
Sodium	M16-Au21318	CP	mg/L	25	26	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Au21319	CP	uS/cm	300	300	<1	30%	Pass	
pH	M16-Au21319	CP	pH Units	4.3	4.2	pass	30%	Pass	
Total Dissolved Solids	M16-Au21319	CP	mg/L	230	220	1.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au21319	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au21319	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au21319	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au21319	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au21319	CP	mg/L	0.18	0.18	3.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au21319	CP	mg/L	0.21	0.21	2.0	30%	Pass
Nitrate (as N)	M16-Au21319	CP	mg/L	0.21	0.21	2.0	30%	Pass
Nitrite (as N)	M16-Au21319	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au21320	CP	mg/L	49	42	16	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Au21321	CP	mg/L	59	60	1.6	30%	Pass
Sulphate (as S)	M16-Au21321	CP	mg/L	16	16	1.6	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Au21322	CP	uS/cm	230	230	<1	30%	Pass
pH	M16-Au21322	CP	pH Units	4.4	4.4	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au21322	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au21322	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au21322	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au21322	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Au21323	CP	mg/L	290	300	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Au21324	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Au21324	CP	mg/L	0.3	0.3	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Au21326	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 24, 2016 8:15 AM**
Eurofins | mgt reference: **512878**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **512878-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Aug 24, 2016**

Client Sample ID			MW7 Water	MW8 Water	MW9 Water	MW10 Water
Sample Matrix			M16-Au21976	M16-Au21977	M16-Au21978	M16-Au21979
Eurofins mgt Sample No.			Aug 23, 2016	Aug 23, 2016	Aug 23, 2016	Aug 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	13	< 10	34	< 10
Chloride	1	mg/L	18	12	18	18
Conductivity (at 25°C)	1	uS/cm	470	100	110	240
pH	0.1	pH Units	5.4	6.1	5.1	7.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	15	< 5	< 5	6.0
Total Dissolved Solids	10	mg/L	Q19400	Q1996	Q19100	Q19190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	54
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	54
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.03	0.09	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	43	3.6	0.82	5.9
Nitrate (as N)	0.02	mg/L	43	3.6	0.82	5.9
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	1.5	1.4	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.5	1.5	0.3
Total Nitrogen (as N)	0.2	mg/L	43	5.1	2.3	6.2
Heavy Metals						
Aluminium	0.05	mg/L	2.0	0.80	37	3.8
Aluminium (filtered)	0.05	mg/L	0.49	0.24	0.41	0.18
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.002	0.034	0.008
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.001	0.012	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.002
Iron	0.05	mg/L	3.6	0.06	16	9.0
Iron (filtered)	0.05	mg/L	0.14	< 0.05	0.62	0.27
Lead	0.001	mg/L	0.003	< 0.001	0.019	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005

Client Sample ID			MW7 Water	MW8 Water	MW9 Water	MW10 Water
Sample Matrix			M16-Au21976	M16-Au21977	M16-Au21978	M16-Au21979
Eurofins mgt Sample No.			Aug 23, 2016	Aug 23, 2016	Aug 23, 2016	Aug 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0003	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.008	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.001
Selenium	0.001	mg/L	< 0.001	0.001	0.003	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.015	0.037	0.010
Zinc (filtered)	0.001	mg/L	0.002	0.010	0.020	0.003
Alkali Metals						
Calcium	0.5	mg/L	49	10	6.8	31
Magnesium	0.5	mg/L	13	1.3	1.6	3.0
Potassium	0.5	mg/L	3.6	0.7	0.9	1.8
Sodium	0.5	mg/L	16	7.0	10	12

Client Sample ID			MW11 Water	MW12 Water	SWL5_1 Water	QC174 Water
Sample Matrix			M16-Au21980	M16-Au21981	M16-Au21982	M16-Au21983
Eurofins mgt Sample No.			Aug 23, 2016	Aug 23, 2016	Aug 23, 2016	Aug 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	38	38	< 10	-
Chloride	1	mg/L	65	58	24	-
Conductivity (at 25°C)	1	uS/cm	390	290	150	-
pH	0.1	pH Units	4.4	4.2	5.6	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	22	14	5.3	-
Total Dissolved Solids	10	mg/L	^{Q19} 220	^{Q19} 190	^{Q19} 120	-
Turbidity	1	NTU	-	-	< 1	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.02	< 0.01	-
Nitrate & Nitrite (as N)	0.05	mg/L	2.3	0.07	< 0.05	-
Nitrate (as N)	0.02	mg/L	2.3	0.07	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.3	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	0.3	-
Total Nitrogen (as N)	0.2	mg/L	2.6	< 0.2	0.3	-
Heavy Metals						
Aluminium	0.05	mg/L	4.8	4.1	0.73	-
Aluminium (filtered)	0.05	mg/L	5.6	3.4	0.68	< 0.05
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW11 Water M16-Au21980 Aug 23, 2016	MW12 Water M16-Au21981 Aug 23, 2016	SWL5_1 Water M16-Au21982 Aug 23, 2016	QC174 Water M16-Au21983 Aug 23, 2016
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Chromium	0.001	mg/L	0.003	0.002	0.004	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.6	2.4	0.11	-
Iron (filtered)	0.05	mg/L	0.91	0.82	0.09	< 0.05
Lead	0.001	mg/L	0.004	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.004	< 0.001	-
Nickel (filtered)	0.001	mg/L	0.004	0.004	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.003	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.007	0.008	-
Zinc (filtered)	0.001	mg/L	0.004	0.003	0.006	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	1.4	1.9	6.6	-
Magnesium	0.5	mg/L	12	7.4	3.2	-
Potassium	0.5	mg/L	< 0.5	0.7	< 0.5	-
Sodium	0.5	mg/L	45	35	16	-
Pathogens						
E.coli	1	MPN/100mL	-	-	10	-
Thermotolerant Coliforms	1	MPN/100mL	-	-	41	-

Client Sample ID			QC175 Water M16-Au21984 Aug 23, 2016
Sample Matrix			
Eurofins mgt Sample No.			
Date Sampled			
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 24, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 24, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 24, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 24, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 24, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 24, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 24, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 24, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 24, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 30, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 24, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 24, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 26, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 26, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 24, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 24, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Aug 24, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Aug 24, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	100			70-130	Pass		
Chloride	%	124			70-130	Pass		
Phosphate total (as P)	%	92			70-130	Pass		
Phosphorus reactive (as P)	%	114			70-130	Pass		
Sulphate (as S)	%	119			70-130	Pass		
Total Dissolved Solids	%	98			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	111			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	115			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	94			70-130	Pass		
Nitrate & Nitrite (as N)	%	101			70-130	Pass		
Nitrate (as N)	%	101			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	77			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	103			80-120	Pass		
Aluminium (filtered)	%	103			80-120	Pass		
Cadmium	%	108			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	92			80-120	Pass		
Chromium (filtered)	%	92			80-120	Pass		
Copper	%	90			80-120	Pass		
Copper (filtered)	%	90			80-120	Pass		
Iron	%	92			80-120	Pass		
Iron (filtered)	%	92			80-120	Pass		
Lead	%	91			80-120	Pass		
Lead (filtered)	%	91			80-120	Pass		
Manganese	%	91			80-120	Pass		
Manganese (filtered)	%	91			80-120	Pass		
Mercury	%	111			75-125	Pass		
Mercury (filtered)	%	111			70-130	Pass		
Nickel	%	90			80-120	Pass		
Nickel (filtered)	%	90			80-120	Pass		
Selenium	%	92			80-120	Pass		
Selenium (filtered)	%	92			80-120	Pass		
Zinc	%	91			80-120	Pass		
Zinc (filtered)	%	91			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	112			70-130	Pass		
Magnesium	%	116			70-130	Pass		
Potassium	%	110			70-130	Pass		
Sodium	%	109			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Au21976	CP	%	81		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au21215	NCP	%	109		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Carbonate Alkalinity (as CaCO ₃)	M16-Au22246	NCP	%	75			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au21215	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Au21018	NCP	%	90			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au21018	NCP	%	97			70-130	Pass	
Nitrate (as N)	M16-Au21018	NCP	%	97			70-130	Pass	
Nitrite (as N)	M16-Au21018	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium (filtered)	S16-Au22585	NCP	%	96			70-130	Pass	
Chromium	M16-Au21672	NCP	%	91			75-125	Pass	
Chromium (filtered)	M16-Au23886	NCP	%	92			70-130	Pass	
Copper	M16-Au21672	NCP	%	89			75-125	Pass	
Copper (filtered)	M16-Au23886	NCP	%	88			70-130	Pass	
Iron (filtered)	M16-Au23886	NCP	%	87			70-130	Pass	
Lead	M16-Au21672	NCP	%	90			75-125	Pass	
Lead (filtered)	M16-Au23886	NCP	%	91			70-130	Pass	
Manganese	M16-Au21672	NCP	%	85			75-125	Pass	
Manganese (filtered)	M16-Au23886	NCP	%	87			70-130	Pass	
Mercury	M16-Au21672	NCP	%	95			70-130	Pass	
Mercury (filtered)	M16-Au23886	NCP	%	91			70-130	Pass	
Nickel	M16-Au21672	NCP	%	89			75-125	Pass	
Nickel (filtered)	M16-Au23886	NCP	%	88			70-130	Pass	
Selenium	M16-Au21097	NCP	%	96			75-125	Pass	
Selenium (filtered)	M16-Au23886	NCP	%	90			70-130	Pass	
Zinc	M16-Au21672	NCP	%	91			75-125	Pass	
Zinc (filtered)	M16-Au23886	NCP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M16-Au21977	CP	%	96			70-130	Pass	
Phosphorus reactive (as P)	M16-Au21977	CP	%	100			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Au21978	CP	%	116			70-130	Pass	
Magnesium	M16-Au21978	CP	%	112			70-130	Pass	
Potassium	M16-Au21978	CP	%	107			70-130	Pass	
Sodium	M16-Au21978	CP	%	111			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Au21981	CP	%	96			70-130	Pass	
Sulphate (as S)	M16-Au21981	CP	%	93			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-Au21981	CP	%	96			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	S16-Au21728	NCP	%	104			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Au21320	NCP	mg/L	49	42	16	30%	Pass	
Conductivity (at 25°C)	M16-Au21223	NCP	uS/cm	8500	9000	6.0	30%	Pass	
pH	M16-Au21214	NCP	pH Units	3.6	3.7	pass	30%	Pass	
Phosphate total (as P)	M16-Au21034	NCP	mg/L	0.08	0.09	2.0	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au21223	NCP	mg/L	32	35	7.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au21223	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au21223	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au21223	NCP	mg/L	32	35	7.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au21018	NCP	mg/L	0.03	0.03	11	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au21018	NCP	mg/L	0.17	0.17	3.0	30%	Pass	
Nitrate (as N)	M16-Au21018	NCP	mg/L	0.17	0.17	3.0	30%	Pass	
Nitrite (as N)	M16-Au21018	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium (filtered)	S16-Au22584	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Au21672	NCP	mg/L	0.002	0.001	16	30%	Pass	
Chromium (filtered)	M16-Au23886	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Au21672	NCP	mg/L	0.002	0.001	28	30%	Pass	
Copper (filtered)	M16-Au23886	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Au21672	NCP	mg/L	0.42	0.42	1.0	30%	Pass	
Iron (filtered)	M16-Au23886	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Au21672	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Au23886	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Au21672	NCP	mg/L	0.071	0.072	1.0	30%	Pass	
Manganese (filtered)	M16-Au23886	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Au21672	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Au23886	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au21672	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M16-Au23886	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Au21097	NCP	mg/L	< 0.001	0.001	20	30%	Pass	
Selenium (filtered)	M16-Au23886	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Au21672	NCP	mg/L	0.006	0.006	12	30%	Pass	
Zinc (filtered)	M16-Au23886	NCP	mg/L	0.007	0.005	30	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Au21977	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Au21977	CP	mg/L	96	97	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	S16-Au21416	NCP	mg/L	1.0	1.0	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Au21978	CP	mg/L	100	94	6.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Au21978	CP	mg/L	6.8	7.0	2.0	30%	Pass	
Magnesium	M16-Au21978	CP	mg/L	1.6	1.6	2.0	30%	Pass	
Potassium	M16-Au21978	CP	mg/L	0.9	1.0	17	30%	Pass	
Sodium	M16-Au21978	CP	mg/L	10	10	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Au21980	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Au21980	CP	mg/L	0.3	< 0.2	110	30%	Fail	Q15

Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Au21981	CP	mg/L	58	61	5.6	30%	Pass
Phosphorus reactive (as P)	M16-Au21981	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Au21981	CP	mg/L	14	14	3.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-Au21982	CP	NTU	< 1	< 1	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Au21027	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 25, 2016 10:16 AM**
Eurofins | mgt reference: **513084**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **513084-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Aug 25, 2016**

Client Sample ID			MW2 Water	MW3 Water	MW4 Water	MW5 Water
Sample Matrix			M16-Au23385	M16-Au23386	M16-Au23387	M16-Au23388
Eurofins mgt Sample No.			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	510	610	280	12
Chloride	1	mg/L	21	18	18	39
Conductivity (at 25°C)	1	uS/cm	280	250	230	220
pH	0.1	pH Units	7.7	7.0	7.1	6.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	8.5	< 5	5.9
Total Dissolved Solids	10	mg/L	180	^{Q19} 210	160	^{Q19} 300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	120	77	62	42
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	120	77	62	42
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.62	0.03	0.15
Nitrate & Nitrite (as N)	0.05	mg/L	1.6	2.5	5.4	0.98
Nitrate (as N)	0.02	mg/L	1.6	2.5	5.4	0.90
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	0.08
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.9	2.1	3.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.5	2.1	3.7
Total Nitrogen (as N)	0.2	mg/L	2.0	4.0	7.5	4.7
Heavy Metals						
Aluminium	0.05	mg/L	1.2	0.87	0.20	2.0
Aluminium (filtered)	0.05	mg/L	< 0.05	0.75	< 0.05	1.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	0.008
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.006
Iron	0.05	mg/L	0.24	0.06	< 0.05	0.23
Iron (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	0.19
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	0.003

Client Sample ID			MW2 Water	MW3 Water	MW4 Water	MW5 Water
Sample Matrix			M16-Au23385	M16-Au23386	M16-Au23387	M16-Au23388
Eurofins mgt Sample No.			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	< 0.005	0.009
Zinc (filtered)	0.001	mg/L	0.002	0.003	0.003	0.008
Alkali Metals						
Calcium	0.5	mg/L	40	33	32	13
Magnesium	0.5	mg/L	2.6	4.7	2.5	3.7
Potassium	0.5	mg/L	< 0.5	1.4	< 0.5	12
Sodium	0.5	mg/L	13	9.3	8.3	20

Client Sample ID			MW6 Water	SWL3_1 Water	SWL3_2 Water	SWL3_3 Water
Sample Matrix			M16-Au23389	M16-Au23390	M16-Au23391	M16-Au23392
Eurofins mgt Sample No.			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	11	< 10	< 10	< 10
Chloride	1	mg/L	110	51	53	52
Conductivity (at 25°C)	1	uS/cm	720	320	300	330
pH	0.1	pH Units	6.5	7.9	7.6	7.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	44	6.4	6.4	6.5
Total Dissolved Solids	10	mg/L	440	200	200	210
Turbidity	1	NTU	-	-	1.9	4.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	25	61	50	60
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	25	61	50	60
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.18	0.18	0.19	0.21
Nitrate & Nitrite (as N)	0.05	mg/L	6.5	0.24	0.25	0.35
Nitrate (as N)	0.02	mg/L	6.5	0.22	0.23	0.33
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	0.3	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.5	0.6	0.6
Total Nitrogen (as N)	0.2	mg/L	7.7	0.7	0.9	1.0

Client Sample ID			MW6	SWL3_1	SWL3_2	SWL3_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au23389	M16-Au23390	M16-Au23391	M16-Au23392
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	4.3	0.33	0.25	0.32
Aluminium (filtered)	0.05	mg/L	0.55	0.25	0.24	0.24
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.43	0.21	0.20	0.24
Iron (filtered)	0.05	mg/L	0.10	0.18	0.17	0.17
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	0.014	< 0.005	0.006
Zinc (filtered)	0.001	mg/L	0.008	0.003	0.003	0.003
Alkali Metals						
Calcium	0.5	mg/L	39	14	13	15
Magnesium	0.5	mg/L	16	7.2	7.1	7.0
Potassium	0.5	mg/L	15	1.7	1.7	1.6
Sodium	0.5	mg/L	65	34	33	33
Pathogens						
E.coli	1	MPN/100mL	-	-	11	13
Thermotolerant Coliforms	1	MPN/100mL	-	-	41	160

Client Sample ID			SWL4_1	SWL4_2	SWL4_3	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au23393	M16-Au23394	M16-Au23395	M16-Au23396
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	-	< 0.02
TRH C10-C14	0.05	mg/L	-	-	-	0.07
TRH C15-C28	0.1	mg/L	-	-	-	0.2
TRH C29-C36	0.1	mg/L	-	-	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	-	-	0.27

Client Sample ID			SWL4_1	SWL4_2	SWL4_3	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au23393	M16-Au23394	M16-Au23395	M16-Au23396
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.001	mg/L	-	-	-	0.003
Toluene	0.001	mg/L	-	-	-	< 0.001
Ethylbenzene	0.001	mg/L	-	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	-	-	< 0.002
o-Xylene	0.001	mg/L	-	-	-	< 0.001
Xylenes - Total	0.003	mg/L	-	-	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	-	-	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	-	< 0.01
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	-	0.08
TRH C6-C10	0.02	mg/L	-	-	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	-	< 0.02
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	-	0.08
TRH >C16-C34	0.1	mg/L	-	-	-	0.2
TRH >C34-C40	0.1	mg/L	-	-	-	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	130	130	130	81
Conductivity (at 25°C)	1	uS/cm	660	640	650	570
pH	0.1	pH Units	6.5	6.8	6.7	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	25	26	26	34
Total Dissolved Solids	10	mg/L	400	400	410	^{Q19} 420
Turbidity	1	NTU	12	4.2	3.6	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	81
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	81
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.18	0.14	0.64
Nitrate & Nitrite (as N)	0.05	mg/L	0.32	0.32	0.31	0.70
Nitrate (as N)	0.02	mg/L	0.31	0.31	0.30	0.68
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.9
Total Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.3	1.6
Heavy Metals						
Aluminium	0.05	mg/L	0.24	0.08	0.13	5.6
Aluminium (filtered)	0.05	mg/L	0.12	< 0.05	0.07	0.24
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.001	0.018
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.001	0.007

Client Sample ID			SWL4_1	SWL4_2	SWL4_3	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au23393	M16-Au23394	M16-Au23395	M16-Au23396
Date Sampled			Aug 24, 2016	Aug 24, 2016	Aug 24, 2016	Aug 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.81	0.55	0.63	2.3
Iron (filtered)	0.05	mg/L	0.36	0.25	0.27	0.17
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.010
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.013	0.017	0.014
Manganese (filtered)	0.005	mg/L	0.012	0.013	0.017	0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.016	0.015	0.017	0.031
Zinc (filtered)	0.001	mg/L	0.016	0.014	0.015	0.010
Alkali Metals						
Calcium	0.5	mg/L	21	21	21	41
Magnesium	0.5	mg/L	14	14	14	7.4
Potassium	0.5	mg/L	6.7	6.8	5.4	14
Sodium	0.5	mg/L	77	77	76	68
Pathogens						
E.coli	1	MPN/100mL	6	4	2	-
Thermotolerant Coliforms	1	MPN/100mL	23	110	99	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Aug 25, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Aug 25, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Aug 25, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Aug 25, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 25, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 25, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 25, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 25, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 25, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 25, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 25, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 25, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 26, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 30, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 26, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 26, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Aug 26, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Aug 26, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 26, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 26, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 26, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 25, 2016	180 Day

Description	Testing Site	Extracted	Holding Time
E.coli - Method: LTM-MIC-6621 Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne Melbourne	Aug 25, 2016 Aug 25, 2016	24 Hour 24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	119			70-130	Pass	
TRH C10-C14	%	118			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	106			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	102			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	105			70-130	Pass	
TRH C6-C10	%	109			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	126			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	106			70-130	Pass	
Chloride	%	105			70-130	Pass	
Phosphate total (as P)	%	103			70-130	Pass	
Phosphorus reactive (as P)	%	122			70-130	Pass	
Sulphate (as S)	%	114			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	99			70-130	Pass	
Total Alkalinity (as CaCO3)	%	103			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrogens (Speciated)								
Ammonia (as N)	%	93			70-130	Pass		
Nitrate & Nitrite (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	97			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	79			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	96			80-120	Pass		
Arsenic (filtered)	%	96			80-120	Pass		
Cadmium	%	89			70-130	Pass		
Cadmium (filtered)	%	98			70-130	Pass		
Chromium	%	94			80-120	Pass		
Chromium (filtered)	%	88			80-120	Pass		
Copper	%	96			80-120	Pass		
Copper (filtered)	%	89			80-120	Pass		
Iron	%	94			80-120	Pass		
Iron (filtered)	%	94			80-120	Pass		
Lead	%	97			80-120	Pass		
Lead (filtered)	%	89			80-120	Pass		
Manganese	%	95			80-120	Pass		
Manganese (filtered)	%	91			80-120	Pass		
Mercury	%	88			75-125	Pass		
Mercury (filtered)	%	88			70-130	Pass		
Nickel	%	97			80-120	Pass		
Nickel (filtered)	%	90			80-120	Pass		
Selenium	%	98			80-120	Pass		
Selenium (filtered)	%	98			80-120	Pass		
Zinc	%	101			80-120	Pass		
Zinc (filtered)	%	101			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	106			70-130	Pass		
Potassium	%	97			70-130	Pass		
Sodium	%	97			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Au24273	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Nitrogens (Speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Au23496	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Au22777	NCP	%	100		75-125	Pass	
Arsenic (filtered)	M16-Fe22895	NCP	%	97		70-130	Pass	
Cadmium	S16-Au23733	NCP	%	96		70-130	Pass	
Cadmium (filtered)	S16-Au24228	NCP	%	99		70-130	Pass	
Chromium	M16-Au22777	NCP	%	82		75-125	Pass	
Chromium (filtered)	M16-Fe22895	NCP	%	93		70-130	Pass	
Copper	M16-Au22777	NCP	%	93		75-125	Pass	
Copper (filtered)	M16-Fe22895	NCP	%	93		70-130	Pass	
Iron (filtered)	M16-Fe22895	NCP	%	95		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Lead	M16-Au22777	NCP	%	87		75-125	Pass	
Lead (filtered)	M16-Fe22895	NCP	%	92		70-130	Pass	
Manganese	B16-Au23175	NCP	%	97		75-125	Pass	
Manganese (filtered)	M16-Fe22337	NCP	%	97		70-130	Pass	
Mercury	M16-Au22777	NCP	%	91		70-130	Pass	
Mercury (filtered)	M16-Fe22895	NCP	%	90		70-130	Pass	
Nickel	M16-Au22777	NCP	%	84		75-125	Pass	
Nickel (filtered)	M16-Fe22895	NCP	%	94		70-130	Pass	
Selenium	M16-Au22777	NCP	%	94		75-125	Pass	
Selenium (filtered)	M16-Fe22895	NCP	%	101		70-130	Pass	
Zinc	M16-Au22777	NCP	%	93		75-125	Pass	
Zinc (filtered)	M16-Fe22895	NCP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Au23386	CP	%	88		70-130	Pass	
Sulphate (as S)	M16-Au23386	CP	%	83		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	M16-Au23386	CP	%	116		70-130	Pass	
Magnesium	M16-Au23386	CP	%	115		70-130	Pass	
Potassium	M16-Au23386	CP	%	110		70-130	Pass	
Sodium	M16-Au23386	CP	%	110		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Ammonia (as N)	M16-Au23387	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au23387	CP	%	63		70-130	Fail	Q08
Nitrate (as N)	M16-Au23387	CP	%	62		70-130	Fail	Q08
Nitrite (as N)	M16-Au23387	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Au23389	CP	%	87		70-130	Pass	
Sulphate (as S)	M16-Au23389	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Au23390	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	M16-Au23391	CP	%	108		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Iron	M16-Au24539	NCP	%	86		75-125	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au25372	NCP	%	103		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au25372	NCP	%	123		70-130	Pass	
Spike - % Recovery								
				Result 1				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions								
TRH C6-C9	M16-Au22800	NCP	%	125		70-130	Pass	
TRH C10-C14	M16-Au23457	NCP	%	90		70-130	Pass	
Spike - % Recovery								
				Result 1				
BTEX								
Benzene	M16-Au22800	NCP	%	126		70-130	Pass	
Toluene	M16-Au22800	NCP	%	126		70-130	Pass	
Ethylbenzene	M16-Au22800	NCP	%	129		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	M16-Au22800	NCP	%	126			70-130	Pass	
o-Xylene	M16-Au22800	NCP	%	130			70-130	Pass	
Xylenes - Total	M16-Au22800	NCP	%	127			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Au22800	NCP	%	119			70-130	Pass	
TRH C6-C10	M16-Au22800	NCP	%	125			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-Au23457	NCP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Au23396	CP	%	93			70-130	Pass	
Sulphate (as S)	M16-Au23396	CP	%	110			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Au23396	CP	%	117			70-130	Pass	
Magnesium	M16-Au23396	CP	%	116			70-130	Pass	
Potassium	M16-Au23396	CP	%	110			70-130	Pass	
Sodium	M16-Au23396	CP	%	113			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Au23385	CP	uS/cm	280	280	1.0	30%	Pass	
pH	M16-Au23385	CP	pH Units	7.7	7.7	pass	30%	Pass	
Phosphate total (as P)	M16-Au24272	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au23385	CP	mg/L	120	110	7.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au23385	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au23385	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au23385	CP	mg/L	120	110	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Au22777	NCP	mg/L	0.036	0.036	1.0	30%	Pass	
Arsenic (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-Au23732	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-Au24228	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Au22777	NCP	mg/L	0.057	0.057	1.0	30%	Pass	
Chromium (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Au22777	NCP	mg/L	0.003	0.004	36	30%	Fail	Q15
Copper (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Au22777	NCP	mg/L	0.96	0.91	6.0	30%	Pass	
Iron (filtered)	M16-Fe22895	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Au22777	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Au22777	NCP	mg/L	0.53	0.52	2.0	30%	Pass	
Manganese (filtered)	M16-Fe22895	NCP	mg/L	0.22	0.22	1.0	30%	Pass	
Mercury	M16-Au22777	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Fe22895	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au22777	NCP	mg/L	0.063	0.064	<1	30%	Pass	
Nickel (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Au22777	NCP	mg/L	0.001	< 0.001	12	30%	Pass	
Selenium (filtered)	M16-Fe22895	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Zinc	M16-Au22777	NCP	mg/L	0.029	0.028	4.0	30%	Pass	
Zinc (filtered)	M16-Fe22895	NCP	mg/L	0.001	0.002	45	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au23386	CP	mg/L	18	19	3.3	30%	Pass	
Sulphate (as S)	M16-Au23386	CP	mg/L	8.5	8.5	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Au23386	CP	mg/L	33	34	1.0	30%	Pass	
Magnesium	M16-Au23386	CP	mg/L	4.7	4.9	4.0	30%	Pass	
Potassium	M16-Au23386	CP	mg/L	1.4	1.4	6.0	30%	Pass	
Sodium	M16-Au23386	CP	mg/L	9.3	9.5	1.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au23387	CP	mg/L	0.03	0.03	4.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au23387	CP	mg/L	5.4	5.4	<1	30%	Pass	
Nitrate (as N)	M16-Au23387	CP	mg/L	5.4	5.4	<1	30%	Pass	
Nitrite (as N)	M16-Au23387	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Au23388	CP	mg/L	300	290	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Au23389	CP	mg/L	110	110	<1	30%	Pass	
Sulphate (as S)	M16-Au23389	CP	mg/L	44	46	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Au23390	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-Au23400	NCP	NTU	1.1	1.2	8.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Au23392	CP	mg/L	0.6	0.6	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Au23395	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Total Alkalinity (as CaCO ₃)	M16-Au26711	NCP	mg/L	69	68	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Au17741	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	A16-Au23190	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	A16-Au23190	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	A16-Au23190	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Au17741	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M16-Au17741	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M16-Au17741	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M16-Au17741	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M16-Au17741	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M16-Au17741	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-Au17741	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-Au17741	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	A16-Au23190	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	A16-Au23190	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	A16-Au23190	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Au23396	CP	mg/L	81	82	1.2	30%	Pass
Sulphate (as S)	M16-Au23396	CP	mg/L	34	35	3.4	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Au23396	CP	mg/L	41	41	1.0	30%	Pass
Magnesium	M16-Au23396	CP	mg/L	7.4	7.5	1.0	30%	Pass
Potassium	M16-Au23396	CP	mg/L	14	15	7.0	30%	Pass
Sodium	M16-Au23396	CP	mg/L	68	67	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Mele Singh	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Aug 26, 2016 8:23 AM**
Eurofins | mgt reference: **513219**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No dissolved metals bottled provided

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **513219-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Aug 26, 2016

Client Sample ID			MW1 Water	SWL1_1 Water	SWL1_2 Water	SWL1_3 Water
Sample Matrix			M16-Au24270	M16-Au24271	M16-Au24272	M16-Au24273
Eurofins mgt Sample No.			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	16	10	10	< 10
Chloride	1	mg/L	39	67	68	43
Conductivity (at 25°C)	1	uS/cm	360	350	360	250
pH	0.1	pH Units	7.2	7.1	7.0	7.1
Phosphate total (as P)	0.05	mg/L	0.11	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.7	11	12	6.4
Total Dissolved Solids	10	mg/L	200	200	200	140
Turbidity	1	NTU	-	1.1	< 1	1.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	80	49	39	32
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	80	49	39	32
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.13	0.05	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	2.8	0.56	0.42	0.17
Nitrate (as N)	0.02	mg/L	2.8	0.55	0.41	0.17
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	2.8	0.6	0.4	< 0.2
Heavy Metals						
Aluminium	0.05	mg/L	2.6	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	0.002	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.001	0.002	0.002
Iron	0.05	mg/L	0.48	0.16	0.13	0.23
Iron (filtered)	0.05	mg/L	0.09	0.07	0.07	0.09

Client Sample ID			MW1	SWL1_1	SWL1_2	SWL1_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au24270	M16-Au24271	M16-Au24272	M16-Au24273
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	0.004	< 0.001	< 0.001	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.020	0.010	0.012
Manganese (filtered)	0.005	mg/L	< 0.005	0.017	0.009	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.033	0.046	0.042
Zinc (filtered)	0.001	mg/L	0.002	0.029	0.046	0.038
Alkali Metals						
Calcium	0.5	mg/L	27	14	13	10
Magnesium	0.5	mg/L	3.7	8.6	8.0	5.1
Potassium	0.5	mg/L	22	3.7	3.6	2.4
Sodium	0.5	mg/L	21	39	37	25
Pathogens						
E.coli	1	MPN/100mL	-	19	5	21
Thermotolerant Coliforms	1	MPN/100mL	-	59	53	83

Client Sample ID			SWL2_1	SWL2_2	SWL2_3	QC176
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au24274	M16-Au24275	M16-Au24276	M16-Au24277
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Chloride	1	mg/L	55	54	59	-
Conductivity (at 25°C)	1	uS/cm	270	260	260	-
pH	0.1	pH Units	7.2	7.1	7.1	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)	5	mg/L	12	10	11	-
Total Dissolved Solids	10	mg/L	150	140	140	-
Turbidity	1	NTU	1.0	1.3	< 1	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	23	23	24	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	23	23	24	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.06	0.04	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.08	0.07	0.07	-
Nitrate (as N)	0.02	mg/L	0.08	0.07	0.07	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	-
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	-

Client Sample ID			SWL2_1	SWL2_2	SWL2_3	QC176
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au24274	M16-Au24275	M16-Au24276	M16-Au24277
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.16	0.17	0.17	-
Aluminium (filtered)	0.05	mg/L	0.13	0.13	0.12	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.014	< 0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.003	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.12	0.07	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.007	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.007	< 0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	0.007	0.006	-
Zinc (filtered)	0.001	mg/L	0.006	0.005	0.006	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	5.6	5.5	5.5	-
Magnesium	0.5	mg/L	7.5	7.5	7.5	-
Potassium	0.5	mg/L	1.9	1.9	1.9	-
Sodium	0.5	mg/L	37	38	38	-
Pathogens						
E.coli	1	MPN/100mL	10	14	9	-
Thermotolerant Coliforms	1	MPN/100mL	55	23	26	-

Client Sample ID			QC177	QC178	QC179	QC180
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au24278	M16-Au24279	M16-Au24280	M16-Au24281
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	-	-	-	< 10
Chloride	1	mg/L	-	-	-	39
Conductivity (at 25°C)	1	uS/cm	-	-	-	370
pH	0.1	pH Units	-	-	-	7.1
Phosphate total (as P)	0.05	mg/L	-	-	-	0.08
Phosphorus reactive (as P)	0.05	mg/L	-	-	-	0.06
Sulphate (as S)	5	mg/L	-	-	-	8.8
Total Dissolved Solids	10	mg/L	-	-	-	210

Client Sample ID			QC177	QC178	QC179	QC180
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Au24278	M16-Au24279	M16-Au24280	M16-Au24281
Date Sampled			Aug 25, 2016	Aug 25, 2016	Aug 25, 2016	Aug 25, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	-	83
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	-	83
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	-	-	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	-	2.8
Nitrate (as N)	0.02	mg/L	-	-	-	2.8
Nitrite (as N)	0.02	mg/L	-	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	-	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	-	0.2
Total Nitrogen (as N)	0.2	mg/L	-	-	-	3.0
Heavy Metals						
Aluminium	0.05	mg/L	-	-	-	3.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	-	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	-	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	-	0.52
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Lead	0.001	mg/L	-	-	-	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	-	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	-	0.006
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Alkali Metals						
Calcium	0.5	mg/L	-	-	-	26
Magnesium	0.5	mg/L	-	-	-	3.7
Potassium	0.5	mg/L	-	-	-	24
Sodium	0.5	mg/L	-	-	-	21

Client Sample ID			QC181
Sample Matrix			Water
Eurofins mgt Sample No.			M16-Au24282
Date Sampled			Aug 25, 2016
Test/Reference	LOR	Unit	
Acidity (as CaCO ₃)	10	mg/L	< 10
Chloride	1	mg/L	52
Conductivity (at 25°C)	1	uS/cm	260
pH	0.1	pH Units	7.1
Phosphate total (as P)	0.05	mg/L	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as S)	5	mg/L	10
Total Dissolved Solids	10	mg/L	160
Turbidity	1	NTU	1.1
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	26
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	26
Nitrogens (speciated)			
Ammonia (as N)	0.01	mg/L	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	0.11
Nitrate (as N)	0.02	mg/L	0.10
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2
Heavy Metals			
Aluminium	0.05	mg/L	0.17
Aluminium (filtered)	0.05	mg/L	0.15
Arsenic	0.001	mg/L	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium	0.00005	mg/L	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium	0.001	mg/L	0.003
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	0.07
Iron (filtered)	0.05	mg/L	< 0.05
Lead	0.001	mg/L	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	0.006
Zinc (filtered)	0.001	mg/L	0.006

Client Sample ID			QC181
Sample Matrix			Water
Eurofins mgt Sample No.			M16-Au24282
Date Sampled			Aug 25, 2016
Test/Reference	LOR	Unit	
Alkali Metals			
Calcium	0.5	mg/L	5.7
Magnesium	0.5	mg/L	7.4
Potassium	0.5	mg/L	1.9
Sodium	0.5	mg/L	38
Pathogens			
E.coli	1	MPN/100mL	16
Thermotolerant Coliforms	1	MPN/100mL	34

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Aug 26, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Aug 26, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Aug 26, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Aug 26, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 26, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Aug 26, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Aug 26, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Aug 26, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Aug 29, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 26, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Aug 26, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Aug 26, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Aug 26, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Aug 26, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Aug 26, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Aug 26, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Aug 29, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Aug 26, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 26, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Aug 26, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Aug 26, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Sodium	mg/L	< 0.5			0.5	Pass		
LCS - % Recovery								
Acidity (as CaCO ₃)	%	106			70-130	Pass		
Chloride	%	125			70-130	Pass		
Phosphate total (as P)	%	92			70-130	Pass		
Phosphorus reactive (as P)	%	122			70-130	Pass		
Sulphate (as S)	%	115			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	100			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	107			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	93			70-130	Pass		
Nitrate & Nitrite (as N)	%	96			70-130	Pass		
Nitrate (as N)	%	96			70-130	Pass		
Nitrite (as N)	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	77			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	94			80-120	Pass		
Cadmium	%	101			70-130	Pass		
Cadmium (filtered)	%	98			70-130	Pass		
Chromium	%	96			80-120	Pass		
Chromium (filtered)	%	96			80-120	Pass		
Copper	%	93			80-120	Pass		
Copper (filtered)	%	93			80-120	Pass		
Iron	%	94			80-120	Pass		
Iron (filtered)	%	94			80-120	Pass		
Lead	%	96			80-120	Pass		
Lead (filtered)	%	96			80-120	Pass		
Manganese	%	94			80-120	Pass		
Manganese (filtered)	%	94			80-120	Pass		
Mercury	%	100			75-125	Pass		
Mercury (filtered)	%	100			70-130	Pass		
Nickel	%	94			80-120	Pass		
Nickel (filtered)	%	94			80-120	Pass		
Selenium	%	95			80-120	Pass		
Selenium (filtered)	%	95			80-120	Pass		
Zinc	%	98			80-120	Pass		
Zinc (filtered)	%	98			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	98			70-130	Pass		
Magnesium	%	96			70-130	Pass		
Potassium	%	95			70-130	Pass		
Sodium	%	92			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-Au23225	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Ammonia (as N)	M16-Au24270	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au24270	CP	%	82		70-130	Pass	
Nitrate (as N)	M16-Au24270	CP	%	82		70-130	Pass	
Nitrite (as N)	M16-Au24270	CP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Au23496	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Au24539	NCP	%	97		75-125	Pass	
Arsenic (filtered)	M16-Au25037	NCP	%	101		70-130	Pass	
Cadmium	M16-Au23498	NCP	%	93		70-130	Pass	
Cadmium (filtered)	S16-Au24228	NCP	%	99		70-130	Pass	
Chromium	M16-Au24539	NCP	%	94		75-125	Pass	
Chromium (filtered)	M16-Au25037	NCP	%	102		70-130	Pass	
Copper	M16-Au24539	NCP	%	88		75-125	Pass	
Copper (filtered)	M16-Au25037	NCP	%	98		70-130	Pass	
Iron	M16-Au24539	NCP	%	86		75-125	Pass	
Iron (filtered)	M16-Au25037	NCP	%	96		70-130	Pass	
Lead	M16-Au24539	NCP	%	91		75-125	Pass	
Lead (filtered)	M16-Au25037	NCP	%	100		70-130	Pass	
Manganese	M16-Au24539	NCP	%	92		75-125	Pass	
Manganese (filtered)	M16-Au25037	NCP	%	99		70-130	Pass	
Mercury	M16-Au24539	NCP	%	95		70-130	Pass	
Mercury (filtered)	M16-Au25037	NCP	%	92		70-130	Pass	
Nickel	M16-Au24539	NCP	%	87		75-125	Pass	
Nickel (filtered)	M16-Au25037	NCP	%	98		70-130	Pass	
Selenium	M16-Au24539	NCP	%	96		75-125	Pass	
Selenium (filtered)	M16-Au25037	NCP	%	103		70-130	Pass	
Zinc	M16-Au24539	NCP	%	91		75-125	Pass	
Zinc (filtered)	M16-Au25037	NCP	%	115		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Au24270	CP	%	92		70-130	Pass	
Magnesium	M16-Au24270	CP	%	96		70-130	Pass	
Potassium	M16-Au24270	CP	%	89		70-130	Pass	
Sodium	M16-Au24270	CP	%	88		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Au24271	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO3)	M16-Au24271	CP	%	92		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Au24271	CP	%	124		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Au24271	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Au24271	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-Au24271	CP	%	91		70-130	Pass	
Nitrite (as N)	M16-Au24271	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Au24273	CP	%	102		70-130	Pass	
Phosphate total (as P)	M16-Au24273	CP	%	105		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Au24270	CP	mg/L	16	16	1.0	30%	Pass	
Conductivity (at 25°C)	M16-Au24270	CP	uS/cm	360	360	<1	30%	Pass	
pH	M16-Au24270	CP	pH Units	7.2	7.2	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Au24270	CP	mg/L	0.06	0.06	2.3	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au24270	CP	mg/L	80	80	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Au24270	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Au24270	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Au24270	CP	mg/L	80	80	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Au24270	CP	mg/L	0.02	0.02	7.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Au24270	CP	mg/L	2.8	2.9	2.0	30%	Pass	
Nitrate (as N)	M16-Au24270	CP	mg/L	2.8	2.9	2.0	30%	Pass	
Nitrite (as N)	M16-Au24270	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Au23495	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Arsenic	M16-Au24539	NCP	mg/L	0.006	0.006	1.0	30%	Pass	
Arsenic (filtered)	M16-Au25037	NCP	mg/L	0.002	0.002	7.0	30%	Pass	
Cadmium	M16-Au23497	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-Au24228	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-Au25037	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Au25037	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Au24539	NCP	mg/L	0.21	0.24	10	30%	Pass	
Iron (filtered)	M16-Au25037	NCP	mg/L	0.08	0.08	3.0	30%	Pass	
Lead	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Au25037	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Au24539	NCP	mg/L	0.034	0.036	6.0	30%	Pass	
Manganese (filtered)	M16-Au25037	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Au24539	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Au25037	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Au24539	NCP	mg/L	0.033	0.035	6.0	30%	Pass	
Nickel (filtered)	M16-Au25037	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Au24539	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Au25037	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Au24539	NCP	mg/L	< 0.005	0.005	17	30%	Pass	
Zinc (filtered)	M16-Au25037	NCP	mg/L	0.010	0.010	3.0	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M16-Au24270	CP	mg/L	27	24	8.0	30%	Pass	
Magnesium	M16-Au24270	CP	mg/L	3.7	3.9	6.0	30%	Pass	
Potassium	M16-Au24270	CP	mg/L	22	23	4.0	30%	Pass	
Sodium	M16-Au24270	CP	mg/L	21	22	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Au24271	CP	mg/L	200	170	1.0	30%	Pass	
Turbidity	M16-Au24251	NCP	NTU	< 1	< 1	<1	30%	Pass	

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Au24271	CP	mg/L	0.13	0.12	2.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Au24271	CP	mg/L	0.56	0.54	4.0	30%	Pass
Nitrate (as N)	M16-Au24271	CP	mg/L	0.55	0.52	5.0	30%	Pass
Nitrite (as N)	M16-Au24271	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Au24272	CP	mg/L	68	63	7.4	30%	Pass
Phosphate total (as P)	M16-Au24272	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Sulphate (as S)	M16-Au24273	CP	mg/L	6.4	5.8	11	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Au24275	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-Au24275	CP	uS/cm	260	260	<1	30%	Pass
pH	M16-Au24275	CP	pH Units	7.1	7.1	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Au24275	CP	mg/L	23	23	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Au24275	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Au24275	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Au24275	CP	mg/L	23	23	3.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CERTIFICATE OF ANALYSIS

Work Order : **EP1607585**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 18-Aug-2016 16:50
Date Analysis Commenced : 19-Aug-2016
Issue Date : 25-Aug-2016 15:55

NATA Accredited Laboratory 825
 Accredited for compliance with
 ISO/IEC 17025.



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ED041G (Sulfate Turbidimetric): LOR for sample 'QC165' raised due to possible sample matrix interference.
- ED041G (Sulfate Turbidimetric): Poor spike recoveries due to sample matrix effects. Confirmed by re-analysis.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC164	QC165	QC166	----	----
Client sampling date / time				[18-Aug-2016]	[18-Aug-2016]	[18-Aug-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1607585-001	EP1607585-002	EP1607585-003	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.53	7.97	7.67	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	5890	2060	1780	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	3610	1540	1070	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	278	199	179	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	278	199	179	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	12	4	11	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	12	<20	<1	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1660	540	507	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	149	46	65	----	----	
Magnesium	7439-95-4	1	mg/L	151	38	39	----	----	
Sodium	7440-23-5	1	mg/L	872	332	234	----	----	
Potassium	7440-09-7	1	mg/L	9	4	6	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	10	12	10	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.4	0.6	0.2	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Chromium	7440-47-3	0.2	µg/L	0.9	0.3	<0.2	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Iron	7439-89-6	2	µg/L	208	128	15	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC164	QC165	QC166	----	----
Client sampling date / time				[18-Aug-2016]	[18-Aug-2016]	[18-Aug-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1607585-001	EP1607585-002	EP1607585-003	-----	-----	
				Result	Result	Result	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Manganese	7439-96-5	0.5	µg/L	27.6	18.3	3.3	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Selenium	7782-49-2	0.2	µg/L	0.3	0.2	<0.2	----	----	
Zinc	7440-66-6	1	µg/L	12	1	7	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	3040	14600	2790	----	----	
Arsenic	7440-38-2	0.2	µg/L	1.4	5.7	1.6	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Chromium	7440-47-3	0.2	µg/L	6.0	27.6	3.8	----	----	
Copper	7440-50-8	0.5	µg/L	2.5	4.8	0.6	----	----	
Iron	7439-89-6	2	µg/L	3890	9180	1460	----	----	
Lead	7439-92-1	0.1	µg/L	2.2	9.0	1.3	----	----	
Manganese	7439-96-5	0.5	µg/L	34.2	28.4	4.0	----	----	
Selenium	7782-49-2	0.2	µg/L	1.3	1.9	0.5	----	----	
Nickel	7440-02-0	0.5	µg/L	2.8	9.8	1.4	----	----	
Zinc	7440-66-6	1	µg/L	258	58	27	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.57	0.11	0.21	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.04	0.04	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.04	0.04	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	0.9	0.7	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.2	0.9	0.7	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.31	0.06	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.05	0.06	----	----	
EN055: Ionic Balance									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC164	QC165	QC166	----	----
Client sampling date / time					[18-Aug-2016]	[18-Aug-2016]	[18-Aug-2016]	----	----
Compound	CAS Number	LOR	Unit		EP1607585-001	EP1607585-002	EP1607585-003	-----	-----
					Result	Result	Result	----	----
EN055: Ionic Balance - Continued									
Total Anions	----	0.01	meq/L		52.6	19.2	17.9	----	----
Total Cations	----	0.01	meq/L		58.0	20.0	16.8	----	----
Ionic Balance	----	0.01	%		4.87	1.92	3.16	----	----

QUALITY CONTROL REPORT

Work Order	: EP1607585	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 18-Aug-2016
Order number	: ----	Date Analysis Commenced	: 19-Aug-2016
C-O-C number	: ----	Issue Date	: 25-Aug-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 555708)									
EP1607589-011	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.71	7.66	0.651	0% - 20%
EP1607589-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.52	7.54	0.266	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 555707)									
EP1607571-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	87600	88500	1.07	0% - 20%
EP1607589-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1640	1640	0.244	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 560551)									
EP1607585-001	QC164	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3610	3270	9.68	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 555706)									
EP1607563-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	135	133	1.25	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	135	133	1.25	0% - 20%
EP1607571-005	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	169	170	0.868	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	169	170	0.868	0% - 20%
ED038A: Acidity (QC Lot: 559551)									
EP1607257-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	12	11	0.00	0% - 50%
EP1607534-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	7	7	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 557387)									
EP1607585-003	QC166	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
EP1607585-001	QC164	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	12	14	18.1	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 557388)									
EP1607585-003	QC166	ED045G: Chloride	16887-00-6	1	mg/L	507	506	0.213	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED045G: Chloride by Discrete Analyser (QC Lot: 557388) - continued									
EP1607585-001	QC164	ED045G: Chloride	16887-00-6	1	mg/L	1660	1700	1.95	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 555191)									
EP1607543-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	2	2	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	54	54	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
EP1607585-001	QC164	ED093F: Calcium	7440-70-2	1	mg/L	149	149	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	151	151	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	872	878	0.739	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	9	9	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 558280)									
EP1607537-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 558652)									
EP1607585-001	QC164	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1618339-008	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 559085)									
EP1607585-001	QC164	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	208	209	0.00	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 559086)									
EP1607613-003	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.07	0.06	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	1.8	1.8	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	42.1	41.8	0.663	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	12.0	12.0	0.00	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	73	72	0.00	0% - 20%
		EG094A-F: Aluminium	7429-90-5	5	µg/L	34	35	0.00	No Limit
EP1607585-001	QC164	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.4	0.4	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.9	0.9	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	27.6	28.2	1.89	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	12	12	0.00	0% - 50%
		EG094A-F: Aluminium	7429-90-5	5	µg/L	10	10	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 559088)									
EP1607585-001	QC164	EG094B-T: Selenium	7782-49-2	0.2	µg/L	1.3	1.4	7.98	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 559088) - continued									
EP1607585-001	QC164	EG094B-T: Iron	7439-89-6	2	µg/L	3890	3900	0.152	0% - 20%
ES1618468-004	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	19500	19600	0.760	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 559089)									
EP1607585-001	QC164	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	2.2	2.3	0.00	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	1.4	1.5	7.36	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	6.0	5.9	0.00	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	2.5	3.4	31.1	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	34.2	34.5	0.781	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	2.8	2.8	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	258	263	2.10	0% - 20%
ES1618468-004	Anonymous	EG094A-T: Aluminium	7429-90-5	5	µg/L	3040	2990	1.64	0% - 20%
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.21	<0.21	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	2.3	2.2	0.00	0% - 50%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<1.0	<1.0	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	326	328	0.728	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	12.1	12.5	3.41	0% - 20%
		EG094A-T: Zinc	7440-66-6	1	µg/L	10	10	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	237	237	0.00	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 557378)									
EP1607585-001	QC164	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.57	0.56	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 557389)									
EP1607585-001	QC164	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 557379)									
EP1607627-010	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.01	79.6	No Limit
EP1607585-001	QC164	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 559325)									
EP1607585-001	QC164	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.2	1.7	33.8	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 559326)									
EP1607585-001	QC164	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.08	0.08	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 557390)									
EP1607585-003	QC166	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.06	0.00	No Limit
EP1607585-001	QC164	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.05	22.6	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 555708)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 555707)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.8	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 560551)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	109	83	111	
				<10	293 mg/L	77.3	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 555706)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	107	76	126	
				<1	200 mg/L	91.2	90	106	
ED038A: Acidity (QCLot: 559551)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	109	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 557387)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	93.2	89	113	
				<1	100 mg/L	100	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 557388)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	96.1	84	120	
				<1	1000 mg/L	109	84	110	
ED093F: Dissolved Major Cations (QCLot: 555191)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.0	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	100	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.0	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.7	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 558280)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	101	83	105	
EG035T: Total Mercury by FIMS (QCLot: 558652)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	99.0	85	105	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 559085)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	103	79	115	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 559085) - continued									
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	105	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 559086)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	102	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	106	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	104	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	103	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	105	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	99.1	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	103	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 559088)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	105	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	105	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 559089)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	106	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	107	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	105	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	106	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	100	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	105	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	101	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 557378)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 557389)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	92.0	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 557379)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.5	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 559325)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	87.1	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 559326)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	75.4	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 557390)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	109	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 557387)							
EP1607585-002	QC165	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# 171	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 557388)							
EP1607585-002	QC165	ED045G: Chloride	16887-00-6	1000 mg/L	94.1	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 558280)							
EP1607537-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	101	70	130
EG035T: Total Mercury by FIMS (QCLot: 558652)							
ES1618339-009	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	84.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 559086)							
EP1607585-002	QC165	EG094A-F: Arsenic	7440-38-2	50 µg/L	115	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	100	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	106	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	96.8	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	99.1	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	107	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	101	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 559089)							
EP1607585-002	QC165	EG094A-T: Arsenic	7440-38-2	50 µg/L	108	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	106	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	110	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	101	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	103	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	98.4	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 557378)							
EP1607585-002	QC165	EK055G: Ammonia as N	7664-41-7	1 mg/L	117	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 557389)							
EP1607585-002	QC165	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	103	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 557379)							
EP1607585-002	QC165	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	114	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 559325)							
EP1607585-001	QC164	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	79.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 559326)							
EP1607585-001	QC164	EK067G: Total Phosphorus as P	----	1 mg/L	73.8	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 557390)							
EP1607585-002	QC165	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	103	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1607585	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 18-Aug-2016
Site	: ----	Issue Date	: 25-Aug-2016
Sampler	: HARRIET CARTER	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EP1607585--002	QC165	Sulfate as SO4 - Turbidimetric	14808-79-8	171 %	70-130%	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved							
QC164, QC166	QC165,	----	----	----	19-Aug-2016	18-Aug-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P)							
QC164, QC166	QC165,	18-Aug-2016	----	----	19-Aug-2016	18-Aug-2016	*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P)							
QC164, QC166	QC165,	18-Aug-2016	----	----	19-Aug-2016	15-Sep-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H)							
QC164, QC166	QC165,	18-Aug-2016	----	----	24-Aug-2016	25-Aug-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC164, QC166	QC165,	18-Aug-2016	----	----	----	19-Aug-2016	01-Sep-2016	✓
ED038A: Acidity								
Miscellaneous Plastic bottle -unpreserved (ED038) QC164, QC166	QC165,	18-Aug-2016	----	----	----	23-Aug-2016	01-Sep-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC164, QC166	QC165,	18-Aug-2016	----	----	----	20-Aug-2016	15-Sep-2016	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC164, QC166	QC165,	18-Aug-2016	----	----	----	20-Aug-2016	15-Sep-2016	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC164, QC166	QC165,	18-Aug-2016	----	----	----	19-Aug-2016	25-Aug-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC164, QC166	QC165,	18-Aug-2016	----	----	----	22-Aug-2016	15-Sep-2016	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC164, QC166	QC165,	18-Aug-2016	----	----	----	23-Aug-2016	15-Sep-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC164, QC166	QC165,	18-Aug-2016	----	----	----	23-Aug-2016	14-Feb-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC164, QC166	QC165,	18-Aug-2016	23-Aug-2016	14-Feb-2017	✓	23-Aug-2016	14-Feb-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC164, QC166	QC165,	18-Aug-2016	----	----	----	20-Aug-2016	15-Sep-2016	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC164, QC166	QC165, 18-Aug-2016	----	----	----	20-Aug-2016	20-Aug-2016	✓	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC164, QC166	QC165, 18-Aug-2016	----	----	----	20-Aug-2016	15-Sep-2016	✓	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC164, QC166	QC165, 18-Aug-2016	24-Aug-2016	15-Sep-2016	✓	24-Aug-2016	15-Sep-2016	✓	
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC164, QC166	QC165, 18-Aug-2016	24-Aug-2016	15-Sep-2016	✓	24-Aug-2016	15-Sep-2016	✓	
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC164, QC166	QC165, 18-Aug-2016	----	----	----	20-Aug-2016	20-Aug-2016	✓	



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Reaural	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1607834**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : Monitoring Event August
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 25-Aug-2016 17:10
Date Analysis Commenced : 25-Aug-2016
Issue Date : 01-Sep-2016 15:37



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Ultra-trace metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC182	----	----	----	----
Client sampling date / time		[25-Aug-2016]			----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1607834-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.02	----	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	290	----	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	186	----	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU	0.8	----	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	19	----	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	19	----	----	----	----	----
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	5	----	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	34	----	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	51	----	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	5	----	----	----	----	----
Magnesium	7439-95-4	1	mg/L	6	----	----	----	----	----
Sodium	7440-23-5	1	mg/L	40	----	----	----	----	----
Potassium	7440-09-7	1	mg/L	2	----	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	213	----	----	----	----	----
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	----
Chromium	7440-47-3	0.2	µg/L	0.6	----	----	----	----	----
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC182	----	----	----	----
Client sampling date / time				[25-Aug-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1607834-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	51	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	1.5	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	5	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	233	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.6	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	0.6	----	----	----	----	
Iron	7439-89-6	2	µg/L	66	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	1.6	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	----	----	----	----	
Zinc	7440-66-6	1	µg/L	5	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.05	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.05	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC182	----	----	----	----
Client sampling date / time				[25-Aug-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1607834-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	2.53	----	----	----	----	
Total Cations	----	0.01	meq/L	2.53	----	----	----	----	
Ionic Balance	----	0.01	%	0.14	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	15	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	15	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1607834	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 25-Aug-2016
Order number	: Monitoring Event August	Date Analysis Commenced	: 25-Aug-2016
C-O-C number	: ----	Issue Date	: 01-Sep-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 563747)									
EP1607816-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	3.15	3.15	0.00	0% - 20%
EP1607835-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.62	7.62	0.00	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 563749)									
EP1607835-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2210	2160	2.67	0% - 20%
EP1607852-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	17500	17700	1.08	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 565574)									
EP1607791-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	94	100	6.68	0% - 50%
EP1607838-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	178	175	1.70	0% - 50%
EA045: Turbidity (QC Lot: 562915)									
EP1607816-001	Anonymous	EA045: Turbidity	----	0.1	NTU	9.8	9.8	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 563743)									
EP1607792-007	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	245	246	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	245	246	0.00	0% - 20%
EP1607784-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
ED038A: Acidity (QC Lot: 566343)									
EP1607728-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	9	8	0.00	No Limit
EP1607835-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	44	41	6.90	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 562902)									
EP1607834-001	QC182	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	34	34	0.00	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED045G: Chloride by Discrete Analyser (QC Lot: 562903)									
EP1607834-001	QC182	ED045G: Chloride	16887-00-6	1	mg/L	51	51	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 563199)									
EP1607785-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3	3	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	50	50	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
EP1607834-001	QC182	ED093F: Calcium	7440-70-2	1	mg/L	5	6	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	40	40	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 566417)									
ES1619072-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 566358)									
EP1607834-001	QC182	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1619049-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 566165)									
EP1607834-001	QC182	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.6	0.6	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1.5	1.6	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	5	4	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	213	214	0.590	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 566166)									
EP1607834-001	QC182	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	51	52	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 566167)									
EP1607834-001	QC182	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.6	0.7	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	0.6	0.6	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	1.6	1.7	7.52	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	5	6	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	233	232	0.804	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 566168)									

Page : 4 of 8
 Work Order : EP1607834
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 566168) - continued									
EP1607834-001	QC182	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	66	67	2.18	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 562900)									
EP1607834-001	QC182	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.05	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 562904)									
EP1607834-001	QC182	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 562901)									
EP1607834-001	QC182	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.05	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 566880)									
EP1607834-001	QC182	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 566879)									
EP1607834-001	QC182	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.05	0.05	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 562905)									
EP1607834-001	QC182	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 563747)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 563749)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.6	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 565574)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.9	83	111	
				<10	293 mg/L	116	70	130	
EA045: Turbidity (QCLot: 562915)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.3	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 563743)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	102	76	126	
				<1	200 mg/L	101	90	106	
ED038A: Acidity (QCLot: 566343)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	112	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 562902)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	89	113	
				<1	100 mg/L	84.6	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 562903)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	93.5	84	120	
				<1	1000 mg/L	92.0	84	110	
ED093F: Dissolved Major Cations (QCLot: 563199)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.5	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.3	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.8	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	97.1	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 566417)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.5	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 566358)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.6	77	111	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 566165)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	98.7	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	112	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.2	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.7	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	97.3	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	96.3	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	93.6	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	97.5	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	96.1	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 566166)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	100	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	103	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 566167)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	104	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	118	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.5	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	104	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	101	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	104	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	93.5	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	98.0	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 566168)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	104	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	107	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 562900)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	101	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 562904)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 562901)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.9	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 566880)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	87.1	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 566879)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	91.6	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 562905)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	106	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 562902)							
EP1607837-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	86.6	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 562903)							
EP1607837-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	92.3	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 566417)							
ES1619072-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	76.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 566358)							
ES1618875-088	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	94.5	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 566165)							
EP1607827-001	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	108	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	117	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	111	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	108	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	107	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	116	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	104	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 566167)							
EP1607827-002	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	117	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	96.0	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	103	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	102	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	102	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	93.4	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	105	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	98.5	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 562900)							
EP1607837-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	113	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 562904)							
EP1607837-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 562901)							
EP1607837-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130

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 Work Order : EP1607834
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 566880)							
EP1607834-001	QC182	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.4	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 566879)							
EP1607834-001	QC182	EK067G: Total Phosphorus as P	----	1 mg/L	106	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 562905)							
EP1607837-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	128	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1607834	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 25-Aug-2016
Site	: ----	Issue Date	: 01-Sep-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: Monitoring Event August	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1607837--001	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural QC182	----	----	----	26-Aug-2016	25-Aug-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) QC182	25-Aug-2016	----	----	----	26-Aug-2016	25-Aug-2016	*
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) QC182	25-Aug-2016	----	----	----	26-Aug-2016	22-Sep-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) QC182	25-Aug-2016	----	----	----	29-Aug-2016	01-Sep-2016	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045) QC182	25-Aug-2016	----	----	----	25-Aug-2016	27-Aug-2016	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) QC182	25-Aug-2016	----	----	----	26-Aug-2016	08-Sep-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) QC182	25-Aug-2016	----	----	----	30-Aug-2016	08-Sep-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	22-Sep-2016	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	22-Sep-2016	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) QC182	25-Aug-2016	----	----	----	26-Aug-2016	01-Sep-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC182	25-Aug-2016	----	----	----	30-Aug-2016	22-Sep-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) QC182	25-Aug-2016	----	----	----	30-Aug-2016	22-Sep-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC182	25-Aug-2016	----	----	----	30-Aug-2016	21-Feb-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC182	25-Aug-2016	30-Aug-2016	21-Feb-2017	✓	30-Aug-2016	21-Feb-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	22-Sep-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	27-Aug-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	22-Sep-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC182	25-Aug-2016	01-Sep-2016	22-Sep-2016	✓	01-Sep-2016	22-Sep-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC182	25-Aug-2016	01-Sep-2016	22-Sep-2016	✓	01-Sep-2016	22-Sep-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method <i>Container / Client Sample ID(s)</i>	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G) QC182	25-Aug-2016	----	----	----	25-Aug-2016	27-Aug-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC182	25-Aug-2016	----	----	----	26-Aug-2016	26-Aug-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 21, 2016 8:13 AM**
Eurofins | mgt reference: **516549**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **516549-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Sep 21, 2016

Client Sample ID			MW52	MW48	MW34	QC183
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se19122	M16-Se19123	M16-Se19124	M16-Se19125
Date Sampled			Sep 20, 2016	Sep 20, 2016	Sep 20, 2016	Sep 20, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	37	35	57	-
Chloride	1	mg/L	9700	820	54	-
Conductivity (at 25°C)	1	uS/cm	29000	3000	240	-
pH	0.1	pH Units	6.8	4.6	5.3	-
Phosphate total (as P)	0.05	mg/L	1.0	0.14	1.2	-
Phosphorus reactive (as P)	0.05	mg/L	^{G01} < 0.5	< 0.05	1.1	-
Sulphate (as SO ₄)	5	mg/L	1000	130	17	-
Total Dissolved Solids	10	mg/L	19000	1700	^{Q19} 480	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	120	< 20	20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	120	< 20	20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.12	0.04	0.39	-
Nitrate & Nitrite (as N)	0.05	mg/L	35	< 0.05	0.06	-
Nitrate (as N)	0.02	mg/L	35	0.02	0.06	-
Nitrite (as N)	0.02	mg/L	0.11	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	8.4	< 0.2	6.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	8.5	< 0.2	6.6	-
Total Nitrogen (as N)	0.2	mg/L	44	< 0.2	6.7	-
Heavy Metals						
Aluminium	0.05	mg/L	2.1	3.9	3.6	-
Aluminium (filtered)	0.05	mg/L	0.40	< 0.05	0.65	< 0.05
Arsenic	0.001	mg/L	0.007	0.003	0.002	-
Arsenic (filtered)	0.001	mg/L	^{G01} < 0.005	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.0010	0.00025	0.00011	-
Cadmium (filtered)	0.00005	mg/L	0.0010	0.00024	< 0.00005	< 0.00005
Chromium	0.001	mg/L	^{G01} < 0.005	0.005	0.004	-
Chromium (filtered)	0.001	mg/L	^{G01} < 0.005	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.19	0.002	0.004	-
Copper (filtered)	0.001	mg/L	0.11	< 0.001	0.003	< 0.001
Iron	0.05	mg/L	8.5	5.4	1.4	-
Iron (filtered)	0.05	mg/L	4.4	0.40	1.1	< 0.05
Lead	0.001	mg/L	^{G01} < 0.005	0.027	0.001	-

Client Sample ID			MW52 Water	MW48 Water	MW34 Water	QC183 Water
Sample Matrix			M16-Se19122	M16-Se19123	M16-Se19124	M16-Se19125
Eurofins mgt Sample No.			Sep 20, 2016	Sep 20, 2016	Sep 20, 2016	Sep 20, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	^{G01} < 0.005	0.003	< 0.001	< 0.001
Manganese	0.005	mg/L	0.19	0.025	< 0.005	-
Manganese (filtered)	0.005	mg/L	0.18	0.025	< 0.005	< 0.005
Mercury	0.0001	mg/L	^{G01} < 0.0005	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	^{G01} < 0.0005	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.023	0.018	0.003	-
Nickel (filtered)	0.001	mg/L	0.019	0.006	0.002	< 0.001
Selenium	0.001	mg/L	0.007	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	^{G01} < 0.005	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	2.1	0.098	0.020	-
Zinc (filtered)	0.001	mg/L	1.9	0.091	0.016	< 0.001
Alkali Metals						
Comments			R14			
Calcium	0.5	mg/L	75	12	10	-
Magnesium	0.5	mg/L	320	64	5.1	-
Potassium	0.5	mg/L	63	13	12	-
Sodium	0.5	mg/L	2700	460	34	-

Client Sample ID			QC184 Water
Sample Matrix			M16-Se19126
Eurofins mgt Sample No.			Sep 20, 2016
Date Sampled			
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 28, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 21, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 21, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Sep 21, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 21, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 21, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 21, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 21, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 21, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 21, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Sep 21, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Sep 21, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Sep 21, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 21, 2016	28 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 21, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 21, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 21, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Sep 21, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 21, 2016 8:13 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 516549	Due: Sep 28, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Eurofins mgt Suite B11	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Sydney Laboratory - NATA Site # 18217											X	X																													
Brisbane Laboratory - NATA Site # 20794																																									
External Laboratory																																									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																				
1	MW52	Sep 20, 2016		Water	M16-Se19122	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW48	Sep 20, 2016		Water	M16-Se19123	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW34	Sep 20, 2016		Water	M16-Se19124	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	QC183	Sep 20, 2016		Water	M16-Se19125			X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	QC184	Sep 20, 2016		Water	M16-Se19126			X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						3	3	5	3	5	3	5	3	5	3	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3	3	3	5	3	3	5	3	3	3	3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	123			70-130	Pass		
Chloride	%	111			70-130	Pass		
Phosphate total (as P)	%	100			70-130	Pass		
Phosphorus reactive (as P)	%	111			70-130	Pass		
Sulphate (as SO ₄)	%	109			70-130	Pass		
Total Dissolved Solids	%	100			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	95			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	102			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	98			70-130	Pass		
Nitrate & Nitrite (as N)	%	100			70-130	Pass		
Nitrate (as N)	%	100			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	94			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	97			80-120	Pass		
Arsenic (filtered)	%	97			80-120	Pass		
Cadmium	%	89			70-130	Pass		
Cadmium (filtered)	%	100			70-130	Pass		
Chromium	%	98			80-120	Pass		
Chromium (filtered)	%	98			80-120	Pass		
Copper	%	97			80-120	Pass		
Copper (filtered)	%	97			80-120	Pass		
Iron	%	99			80-120	Pass		
Iron (filtered)	%	99			80-120	Pass		
Lead	%	96			80-120	Pass		
Lead (filtered)	%	96			80-120	Pass		
Manganese	%	100			80-120	Pass		
Manganese (filtered)	%	100			80-120	Pass		
Mercury	%	100			75-125	Pass		
Mercury (filtered)	%	100			70-130	Pass		
Nickel	%	97			80-120	Pass		
Nickel (filtered)	%	97			80-120	Pass		
Selenium	%	95			80-120	Pass		
Selenium (filtered)	%	95			80-120	Pass		
Zinc	%	98			80-120	Pass		
Zinc (filtered)	%	98			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	111			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	112			70-130	Pass		
Sodium	%	110			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Se18992	NCP	%	91		70-130	Pass	
Phosphate total (as P)	M16-Se20222	NCP	%	112		70-130	Pass	
Phosphorus reactive (as P)	M16-Se19119	NCP	%	81		70-130	Pass	
Sulphate (as SO ₄)	M16-Se18992	NCP	%	72		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M16-Se19118	NCP	%	114			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Se19930	NCP	%	96			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se19930	NCP	%	97			70-130	Pass	
Nitrate (as N)	M16-Se19930	NCP	%	96			70-130	Pass	
Nitrite (as N)	M16-Se19930	NCP	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se19099	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M16-Se18315	NCP	%	91			75-125	Pass	
Arsenic (filtered)	M16-Se19081	NCP	%	95			70-130	Pass	
Cadmium (filtered)	M16-Se19099	NCP	%	97			70-130	Pass	
Chromium	M16-Se18315	NCP	%	82			75-125	Pass	
Chromium (filtered)	M16-Se19558	NCP	%	94			70-130	Pass	
Copper (filtered)	M16-Se19558	NCP	%	88			70-130	Pass	
Iron	M16-Se18315	NCP	%	81			75-125	Pass	
Iron (filtered)	M16-Se19558	NCP	%	92			70-130	Pass	
Lead (filtered)	M16-Se19558	NCP	%	90			70-130	Pass	
Manganese	M16-Se13189	NCP	%	95			75-125	Pass	
Manganese (filtered)	B16-Se19392	NCP	%	81			70-130	Pass	
Mercury (filtered)	M16-Se18983	NCP	%	110			70-130	Pass	
Nickel (filtered)	M16-Se19558	NCP	%	88			70-130	Pass	
Selenium	M16-Se18315	NCP	%	85			75-125	Pass	
Selenium (filtered)	M16-Se19558	NCP	%	95			70-130	Pass	
Zinc (filtered)	M16-Se19558	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Se19119	NCP	%	108			70-130	Pass	
Magnesium	M16-Se19119	NCP	%	113			70-130	Pass	
Potassium	M16-Se19119	NCP	%	103			70-130	Pass	
Sodium	M16-Se19119	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M16-Se19123	CP	%	87			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	B16-Se20539	NCP	%	87			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Se20336	NCP	mg/L	1400	1500	4.9	30%	Pass	
Phosphate total (as P)	M16-Se20221	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Se19118	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO ₄)	M16-Se20336	NCP	mg/L	1700	1800	8.9	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Se19930	NCP	mg/L	0.01	0.01	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Se19930	NCP	mg/L	0.06	< 0.05	11	30%	Pass	
Nitrate (as N)	M16-Se19930	NCP	mg/L	0.06	0.05	11	30%	Pass	
Nitrite (as N)	M16-Se19930	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se19098	NCP	mg/L	8.2	9.0	9.1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se20336	NCP	mg/L	< 0.25	< 0.25	<1	30%	Pass
Arsenic	M16-Se18315	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Se19081	NCP	mg/L	0.013	0.012	2.0	30%	Pass
Cadmium	M16-Se19122	CP	mg/L	0.0010	0.00095	1.0	30%	Pass
Cadmium (filtered)	M16-Se19098	NCP	mg/L	0.0013	0.0013	1.0	30%	Pass
Chromium	M16-Se18315	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Se19558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Se18315	NCP	mg/L	0.044	0.044	1.0	30%	Pass
Copper (filtered)	M16-Se19558	NCP	mg/L	0.002	0.002	1.0	30%	Pass
Iron	M16-Se18315	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Iron (filtered)	M16-Se19558	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Se18315	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Se19558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Se18315	NCP	mg/L	0.27	0.27	<1	30%	Pass
Manganese (filtered)	M16-Se19558	NCP	mg/L	0.34	0.33	2.0	30%	Pass
Mercury (filtered)	M16-Se19558	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se18315	NCP	mg/L	0.004	0.005	2.0	30%	Pass
Nickel (filtered)	M16-Se19558	NCP	mg/L	0.004	0.004	6.0	30%	Pass
Selenium	M16-Se18315	NCP	mg/L	0.003	0.002	2.0	30%	Pass
Selenium (filtered)	M16-Se19558	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se18315	NCP	mg/L	0.95	0.96	1.0	30%	Pass
Zinc (filtered)	M16-Se19558	NCP	mg/L	0.012	0.011	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se19119	NCP	mg/L	68	69	2.0	30%	Pass
Magnesium	M16-Se19119	NCP	mg/L	230	240	2.0	30%	Pass
Potassium	M16-Se19119	NCP	mg/L	26	28	5.0	30%	Pass
Sodium	M16-Se19119	NCP	mg/L	1400	1400	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Se19123	CP	mg/L	35	35	<1	30%	Pass
Conductivity (at 25°C)	M16-Se19123	CP	uS/cm	3000	3100	<1	30%	Pass
pH	M16-Se19123	CP	pH Units	4.6	4.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se19123	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se19123	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se19123	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se19123	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se19124	CP	mg/L	480	480	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Se20257	NCP	mg/L	< 0.25	< 0.25	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R14	These results have been confirmed by repeat analysis

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Huong Le	Senior Analyst-Inorganic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 22, 2016 8:23 AM**
Eurofins | mgt reference: **516767**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **516767-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Sep 22, 2016

Client Sample ID			MW48 Water	MW21 Water	MW25 Water	MW16 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Se20629	M16-Se20630	M16-Se20631	M16-Se20632
Date Sampled			Sep 21, 2016	Sep 21, 2016	Sep 21, 2016	Sep 21, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	16	84	28	66
Chloride	1	mg/L	390	70	67	63
Conductivity (at 25°C)	1	uS/cm	1500	410	370	300
Nitrate (as N)	0.02	mg/L	< 0.02	3.9	5.9	2.5
pH	0.1	pH Units	7.4	4.2	5.6	4.5
Phosphate total (as P)	0.05	mg/L	0.23	0.07	0.21	0.05
Phosphorus reactive (as P)	0.05	mg/L	0.10	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	16	62	39	44
Total Dissolved Solids	10	mg/L	^{Q19} 1400	230	^{Q19} 390	200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	210	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	210	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.7	0.08	< 0.01	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	3.9	6.0	2.6
Nitrate (as N)	0.02	mg/L	< 0.02	3.9	5.9	2.5
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.7	0.08	1	0.575
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.4	0.5	1.0	0.7
Total Nitrogen (as N)	0.2	mg/L	3.4	3.9	7	3.25
Heavy Metals						
Aluminium	0.05	mg/L	80	9.6	9.7	13
Aluminium (filtered)	0.05	mg/L	< 0.05	7.4	0.84	3.5
Arsenic	0.001	mg/L	0.042	< 0.001	0.003	0.002
Arsenic (filtered)	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.14	0.004	0.007	0.018
Chromium (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.025	< 0.001	0.006	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	52	9.9	1.7	6.6
Iron (filtered)	0.05	mg/L	0.38	9.9	0.06	0.38

Client Sample ID			MW48 Water	MW21 Water	MW25 Water	MW16 Water
Sample Matrix			M16-Se20629	M16-Se20630	M16-Se20631	M16-Se20632
Eurofins mgt Sample No.			Sep 21, 2016	Sep 21, 2016	Sep 21, 2016	Sep 21, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	0.15	0.001	0.011	0.046
Lead (filtered)	0.001	mg/L	0.002	0.001	< 0.001	0.009
Manganese	0.005	mg/L	0.022	< 0.005	0.025	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.010	< 0.005
Mercury	0.0001	mg/L	0.0006	< 0.0001	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.032	0.005	0.004	0.005
Nickel (filtered)	0.001	mg/L	0.001	0.005	0.001	0.003
Selenium	0.001	mg/L	0.055	< 0.001	0.003	0.002
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	0.21	< 0.005	0.016	0.007
Zinc (filtered)	0.001	mg/L	0.002	0.002	0.003	0.002
Alkali Metals						
Calcium	0.5	mg/L	20	3.5	4.8	10
Magnesium	0.5	mg/L	31	4.6	7.0	6.0
Potassium	0.5	mg/L	6.1	2.4	2.2	1.5
Sodium	0.5	mg/L	230	35	48	31

Client Sample ID			QC185 Water	QC186 Water
Sample Matrix			M16-Se20633	M16-Se20634
Eurofins mgt Sample No.			Sep 21, 2016	Sep 21, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.001	mg/L	< 0.001	< 0.001

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 03, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 22, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 22, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Sep 22, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 22, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 22, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 23, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 23, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 23, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 23, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 23, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 23, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Sep 22, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 22, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 22, 2016	7 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 22, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 23, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 23, 2016	7 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Sep 22, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 516767 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Sep 22, 2016 8:23 AM Due: Sep 29, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Eurofins mgt Suite B11	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sydney Laboratory - NATA Site # 18217											X	X																													
Brisbane Laboratory - NATA Site # 20794																																									
External Laboratory																																									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																				
1	MW48	Sep 21, 2016		Water	M16-Se20629	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW21	Sep 21, 2016		Water	M16-Se20630	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	MW25	Sep 21, 2016		Water	M16-Se20631	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW16	Sep 21, 2016		Water	M16-Se20632	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	QC185	Sep 21, 2016		Water	M16-Se20633			X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	QC186	Sep 21, 2016		Water	M16-Se20634			X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Test Counts						4	4	6	4	6	4	6	4	6	4	4	6	4	6	4	6	4	6	4	6	4	6	4	6	4	4	4	4	6	4	4	6	4	4	4	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	97			70-130	Pass		
Chloride	%	119			70-130	Pass		
Nitrate (as N)	%	99			70-130	Pass		
Phosphate total (as P)	%	99			70-130	Pass		
Phosphorus reactive (as P)	%	112			70-130	Pass		
Sulphate (as SO ₄)	%	109			70-130	Pass		
Total Dissolved Solids	%	100			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	80			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	106			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	99			70-130	Pass		
Nitrate & Nitrite (as N)	%	99			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	114			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	94			80-120	Pass		
Arsenic (filtered)	%	96			80-120	Pass		
Cadmium	%	97			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	100			80-120	Pass		
Chromium (filtered)	%	102			80-120	Pass		
Copper	%	94			80-120	Pass		
Copper (filtered)	%	98			80-120	Pass		
Iron	%	107			80-120	Pass		
Iron (filtered)	%	99			80-120	Pass		
Lead	%	99			80-120	Pass		
Lead (filtered)	%	101			80-120	Pass		
Manganese	%	91			80-120	Pass		
Manganese (filtered)	%	94			80-120	Pass		
Mercury	%	98			75-125	Pass		
Mercury (filtered)	%	106			70-130	Pass		
Nickel	%	93			80-120	Pass		
Nickel (filtered)	%	97			80-120	Pass		
Selenium	%	95			80-120	Pass		
Selenium (filtered)	%	100			80-120	Pass		
Zinc	%	94			80-120	Pass		
Zinc (filtered)	%	97			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	116			70-130	Pass		
Magnesium	%	112			70-130	Pass		
Potassium	%	110			70-130	Pass		
Sodium	%	111			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Se20461	NCP	%	117		70-130	Pass	
Phosphorus reactive (as P)	M16-Se24462	NCP	%	75		70-130	Pass	
Sulphate (as SO ₄)	M16-Se20461	NCP	%	86		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se20870	NCP	%	121		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	B16-Se20539	NCP	%	87		75-125	Pass	
Arsenic	M16-Se20449	NCP	%	97		75-125	Pass	
Arsenic (filtered)	B16-Se20665	NCP	%	84		70-130	Pass	
Cadmium	S16-Se25997	NCP	%	97		70-130	Pass	
Cadmium (filtered)	M16-Se20472	NCP	%	106		70-130	Pass	
Chromium	M16-Se20449	NCP	%	102		75-125	Pass	
Chromium (filtered)	B16-Se20665	NCP	%	94		70-130	Pass	
Copper	M16-Se20449	NCP	%	97		75-125	Pass	
Copper (filtered)	A16-Se20936	NCP	%	90		70-130	Pass	
Iron (filtered)	B16-Se20539	NCP	%	75		70-130	Pass	
Lead	M16-Se20449	NCP	%	99		75-125	Pass	
Lead (filtered)	B16-Se20665	NCP	%	88		70-130	Pass	
Manganese	M16-Se20449	NCP	%	95		75-125	Pass	
Manganese (filtered)	A16-Se20936	NCP	%	91		70-130	Pass	
Mercury	M16-Se20449	NCP	%	96		70-130	Pass	
Mercury (filtered)	B16-Se20665	NCP	%	96		70-130	Pass	
Nickel	M16-Se20449	NCP	%	96		75-125	Pass	
Nickel (filtered)	A16-Se20936	NCP	%	90		70-130	Pass	
Selenium	M16-Se20449	NCP	%	101		75-125	Pass	
Selenium (filtered)	B16-Se20665	NCP	%	85		70-130	Pass	
Zinc	M16-Se20449	NCP	%	99		75-125	Pass	
Zinc (filtered)	A16-Se20936	NCP	%	93		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrate (as N)	M16-Se20630	CP	%	75		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Se20907	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Se20630	CP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se20630	CP	%	75		70-130	Pass	
Nitrite (as N)	M16-Se20630	CP	%	90		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se20630	CP	%	102		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Se20631	CP	%	90		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron	M16-Se19463	NCP	%	125		75-125	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se20631	CP	%	101		70-130	Pass	
Magnesium	M16-Se20631	CP	%	108		70-130	Pass	
Potassium	M16-Se20631	CP	%	99		70-130	Pass	
Sodium	M16-Se20631	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Se20632	CP	%	75		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Se20629	CP	uS/cm	1500	1500	<1	30%	Pass	
pH	M16-Se20629	CP	pH Units	7.4	7.3	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Se20629	CP	mg/L	0.10	0.11	8.8	30%	Pass	
Total Dissolved Solids	M16-Se20774	NCP	mg/L	670	680	2.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M16-Se20629	CP	mg/L	210	210	<1	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Se20629	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M16-Se20629	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M16-Se20629	CP	mg/L	210	210	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	B16-Se20539	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-Se20467	NCP	mg/L	0.001	0.001	4.0	30%	Pass	
Arsenic (filtered)	B16-Se20665	NCP	mg/L	0.003	0.003	2.0	30%	Pass	
Cadmium (filtered)	M16-Se20471	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-Se20467	NCP	mg/L	0.007	0.007	<1	30%	Pass	
Chromium (filtered)	B16-Se20665	NCP	mg/L	0.009	0.008	5.0	30%	Pass	
Copper	M16-Se20467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	B16-Se20665	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Iron (filtered)	B16-Se20539	NCP	mg/L	0.06	0.05	13	30%	Pass	
Lead	M16-Se20467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	B16-Se20665	NCP	mg/L	0.024	0.024	1.0	30%	Pass	
Manganese	M16-Se20467	NCP	mg/L	0.006	0.006	2.0	30%	Pass	
Manganese (filtered)	B16-Se20665	NCP	mg/L	1.3	1.2	2.0	30%	Pass	
Mercury	M16-Se20467	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	B16-Se20665	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Se20467	NCP	mg/L	0.002	0.002	3.0	30%	Pass	
Nickel (filtered)	B16-Se20665	NCP	mg/L	0.064	0.063	2.0	30%	Pass	
Selenium	M16-Se20467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B16-Se20665	NCP	mg/L	0.004	0.004	3.0	30%	Pass	
Zinc	M16-Se20467	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	B16-Se20665	NCP	mg/L	0.31	0.31	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrate (as N)	M16-Se20630	CP	mg/L	3.9	4.0	1.0	30%	Pass	
Phosphorus reactive (as P)	M16-Se20630	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Se20630	CP	mg/L	0.08	0.08	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Se20630	CP	mg/L	3.9	4.0	1.0	30%	Pass	
Nitrite (as N)	M16-Se20630	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se20630	CP	mg/L	0.5	0.7	35	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	M16-Se19122	NCP	mg/L	0.0010	0.0010	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Se20631	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Se19463	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron	M16-Se19463	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se20631	CP	mg/L	4.8	4.6	4.0	30%	Pass
Magnesium	M16-Se20631	CP	mg/L	7.0	6.8	4.0	30%	Pass
Potassium	M16-Se20631	CP	mg/L	2.2	2.3	4.0	30%	Pass
Sodium	M16-Se20631	CP	mg/L	48	47	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Se20632	CP	mg/L	66	52	24	30%	Pass
Chloride	M16-Se20632	CP	mg/L	63	63	<1	30%	Pass
Conductivity (at 25°C)	M16-Se20632	CP	uS/cm	300	350	<1	30%	Pass
pH	M16-Se20632	CP	pH Units	4.5	4.5	pass	30%	Pass
Phosphate total (as P)	M16-Se20632	CP	mg/L	0.05	0.05	<1	30%	Pass
Sulphate (as SO ₄)	M16-Se20632	CP	mg/L	44	44	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se20632	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se20632	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se20632	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se20632	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Se20632	CP	mg/L	0.7	0.6	5.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	No
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Huong Le	Senior Analyst-Inorganic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 23, 2016 8:27 AM**
Eurofins | mgt reference: **516915**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **516915-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Sep 23, 2016**

Client Sample ID			MW10 Water	MW3 Water	MW55 Water	QC187 Water
Sample Matrix			M16-Se21745	M16-Se21746	M16-Se21747	M16-Se21748
Eurofins mgt Sample No.			Sep 22, 2016	Sep 22, 2016	Sep 22, 2016	Sep 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	-
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	-
Toluene	0.001	mg/L	-	-	< 0.001	-
Ethylbenzene	0.001	mg/L	-	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	-
o-Xylene	0.001	mg/L	-	-	< 0.001	-
Xylenes - Total	0.003	mg/L	-	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	-	91	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	16	28	27	-
Chloride						
Chloride	1	mg/L	22	18	82	-
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	250	240	790	-
pH						
pH	0.1	pH Units	7.1	6.4	6.7	-
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	0.14	0.10	0.09	-
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as S)						
Sulphate (as S)	5	mg/L	6.1	< 5	50	-
Sulphate (as SO4)						
Sulphate (as SO4)	5	mg/L	18	14	150	-
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	^{Q19} 180	^{Q19} 190	490	-

Client Sample ID			MW10 Water	MW3 Water	MW55 Water	QC187 Water
Sample Matrix			M16-Se21745	M16-Se21746	M16-Se21747	M16-Se21748
Eurofins mgt Sample No.			Sep 22, 2016	Sep 22, 2016	Sep 22, 2016	Sep 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	63	70	98	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	63	70	98	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.05	0.24	-
Nitrate & Nitrite (as N)	0.05	mg/L	6.0	2.0	5.9	-
Nitrate (as N)	0.02	mg/L	6.0	2.0	5.8	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.06	-
Organic Nitrogen (as N)	0.2	mg/L	13.96	6.25	5.96	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	14	6.3	6.2	-
Total Nitrogen (as N)	0.2	mg/L	20	8.3	12.1	-
Heavy Metals						
Aluminium	0.05	mg/L	4.4	2.4	1.7	-
Aluminium (filtered)	0.05	mg/L	0.17	0.72	0.28	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.010	0.003	0.005	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	< 0.001	0.002	-
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.3	0.22	1.2	-
Iron (filtered)	0.05	mg/L	0.25	< 0.05	0.16	< 0.05
Lead	0.001	mg/L	0.005	0.001	0.003	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.009	0.008	-
Zinc (filtered)	0.001	mg/L	0.003	0.003	0.002	< 0.001
Alkali Metals						
Calcium	0.5	mg/L	36	31	55	-
Magnesium	0.5	mg/L	3.5	4.4	8.5	-
Potassium	0.5	mg/L	1.3	1.6	19	-
Sodium	0.5	mg/L	10	9.4	75	-

Client Sample ID			QC188	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se21749	M16-Se21750	M16-Se21751	M16-Se21752
Date Sampled			Sep 22, 2016	Sep 22, 2016	Sep 22, 2016	Sep 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Chloride	1	mg/L	-	57	57	57
Conductivity (at 25°C)	1	uS/cm	-	330	330	330
pH	0.1	pH Units	-	7.8	7.9	7.8
Phosphate total (as P)	0.05	mg/L	-	0.06	0.07	0.06
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	6.5	8.3	6.3
Sulphate (as SO ₄)	5	mg/L	-	19	25	19
Total Dissolved Solids	10	mg/L	-	180	180	180
Turbidity	1	NTU	-	1.7	2.0	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	55	55	60
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	55	55	60
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.13	0.12	0.12
Nitrate & Nitrite (as N)	0.05	mg/L	-	0.29	0.28	0.32
Nitrate (as N)	0.02	mg/L	-	0.28	0.27	0.30
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	3.67	2.78	2.58
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	3.8	2.9	2.7
Total Nitrogen (as N)	0.2	mg/L	-	4.09	3.18	3.02
Heavy Metals						
Aluminium	0.05	mg/L	-	0.23	0.25	0.24
Aluminium (filtered)	0.05	mg/L	< 0.05	0.23	0.25	0.23
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	0.00007	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.17	0.17	0.16
Iron (filtered)	0.05	mg/L	< 0.05	0.14	0.14	0.13
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.001	mg/L	< 0.001	0.003	0.003	0.003

Client Sample ID			QC188	SWL3-1	SWL3-2	SWL3-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se21749	M16-Se21750	M16-Se21751	M16-Se21752
Date Sampled			Sep 22, 2016	Sep 22, 2016	Sep 22, 2016	Sep 22, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	-	16	15	17
Magnesium	0.5	mg/L	-	7.9	7.7	6.6
Potassium	0.5	mg/L	-	1.8	1.7	5.1
Sodium	0.5	mg/L	-	35	34	36
Pathogens						
E.coli	1	MPN/100mL	-	41	730	20
Thermotolerant Coliforms	1	MPN/100mL	-	41	1600	20

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Sep 27, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Sep 23, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Sep 23, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Sep 27, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 03, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 23, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Sep 23, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 23, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 23, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Sep 26, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 23, 2016	14 Day
Nitrogens (speciated)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 23, 2016	28 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 23, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 23, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 23, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 27, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 27, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Melbourne	Sep 23, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Sep 23, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Sep 23, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 23, 2016	28 Day
Sulphate (as SO ₄)	Melbourne	Sep 23, 2016	28 Day

Description	Testing Site	Extracted	Holding Time
- Method: LTM-INO-4110 Sulfate by Discrete Analyser Ammonia (as N)	Melbourne	Sep 23, 2016	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA Nitrate (as N)	Melbourne	Sep 23, 2016	7 Day
- Method: APHA 4500-NO3 Nitrate Nitrogen by FIA Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Sep 23, 2016	180 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Cadmium (filtered)	mg/L	< 0.00005		0.00005	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.005		0.005	Pass	
Zinc (filtered)	mg/L	< 0.001		0.001	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	115		70-130	Pass	
TRH C10-C14	%	76		70-130	Pass	
LCS - % Recovery						
BTEX						
Benzene	%	119		70-130	Pass	
Toluene	%	93		70-130	Pass	
Ethylbenzene	%	92		70-130	Pass	
m&p-Xylenes	%	96		70-130	Pass	
Xylenes - Total	%	95		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	127		70-130	Pass	
TRH C6-C10	%	105		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	%	77		70-130	Pass	
LCS - % Recovery						
Acidity (as CaCO3)	%	97		70-130	Pass	
Chloride	%	116		70-130	Pass	
Phosphate total (as P)	%	99		70-130	Pass	
Phosphorus reactive (as P)	%	113		70-130	Pass	
Sulphate (as S)	%	112		70-130	Pass	
Sulphate (as SO4)	%	112		70-130	Pass	
Total Dissolved Solids	%	100		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO3)	%	96		70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Total Alkalinity (as CaCO ₃)	%	106			70-130	Pass		
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	96			70-130	Pass		
Nitrate & Nitrite (as N)	%	97			70-130	Pass		
Nitrate (as N)	%	97			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	114			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	95			80-120	Pass		
Arsenic (filtered)	%	95			80-120	Pass		
Cadmium	%	90			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	97			80-120	Pass		
Chromium (filtered)	%	97			80-120	Pass		
Copper	%	95			80-120	Pass		
Copper (filtered)	%	95			80-120	Pass		
Iron	%	94			80-120	Pass		
Iron (filtered)	%	94			80-120	Pass		
Lead	%	98			80-120	Pass		
Lead (filtered)	%	98			80-120	Pass		
Manganese	%	94			80-120	Pass		
Manganese (filtered)	%	94			80-120	Pass		
Mercury	%	97			75-125	Pass		
Mercury (filtered)	%	97			70-130	Pass		
Nickel	%	95			80-120	Pass		
Nickel (filtered)	%	95			80-120	Pass		
Selenium	%	101			80-120	Pass		
Selenium (filtered)	%	101			80-120	Pass		
Zinc	%	96			80-120	Pass		
Zinc (filtered)	%	96			80-120	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	106			70-130	Pass		
Magnesium	%	111			70-130	Pass		
Potassium	%	100			70-130	Pass		
Sodium	%	101			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Se20461	NCP	%	117		70-130	Pass	
Phosphorus reactive (as P)	M16-Se21745	CP	%	73		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Se20907	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Se21458	NCP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se21458	NCP	%	94		70-130	Pass	
Nitrate (as N)	M16-Se21458	NCP	%	94		70-130	Pass	
Nitrite (as N)	M16-Se21458	NCP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se20461	NCP	%	108		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals				Result 1				
Aluminium (filtered)	B16-Se20539	NCP	%	87		75-125	Pass	
Arsenic	M16-Se19238	NCP	%	90		75-125	Pass	
Arsenic (filtered)	A16-Se20936	NCP	%	98		70-130	Pass	
Cadmium	S16-Se25997	NCP	%	97		70-130	Pass	
Cadmium (filtered)	M16-Se20472	NCP	%	106		70-130	Pass	
Chromium	M16-Se19238	NCP	%	91		75-125	Pass	
Chromium (filtered)	A16-Se20936	NCP	%	96		70-130	Pass	
Copper	M16-Se19238	NCP	%	85		75-125	Pass	
Copper (filtered)	A16-Se20936	NCP	%	90		70-130	Pass	
Iron	M16-Se19463	NCP	%	125		75-125	Pass	
Iron (filtered)	A16-Se20936	NCP	%	90		70-130	Pass	
Lead	M16-Se19238	NCP	%	91		75-125	Pass	
Lead (filtered)	A16-Se20936	NCP	%	92		70-130	Pass	
Manganese	M16-Se20449	NCP	%	95		75-125	Pass	
Manganese (filtered)	A16-Se20936	NCP	%	91		70-130	Pass	
Mercury	M16-Se19238	NCP	%	89		70-130	Pass	
Mercury (filtered)	A16-Se20936	NCP	%	89		70-130	Pass	
Nickel	M16-Se20449	NCP	%	96		75-125	Pass	
Nickel (filtered)	A16-Se20936	NCP	%	90		70-130	Pass	
Selenium	M16-Se19238	NCP	%	85		75-125	Pass	
Selenium (filtered)	A16-Se20936	NCP	%	93		70-130	Pass	
Zinc	M16-Se20449	NCP	%	99		75-125	Pass	
Zinc (filtered)	A16-Se20936	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Se21746	CP	%	101		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Se21746	CP	%	129		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M16-Se20497	NCP	%	122		70-130	Pass	
TRH C10-C14	M16-Se21764	NCP	%	70		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M16-Se20497	NCP	%	124		70-130	Pass	
Toluene	M16-Se20497	NCP	%	103		70-130	Pass	
Ethylbenzene	M16-Se20497	NCP	%	103		70-130	Pass	
m&p-Xylenes	M16-Se20497	NCP	%	111		70-130	Pass	
o-Xylene	M16-Se20497	NCP	%	106		70-130	Pass	
Xylenes - Total	M16-Se20497	NCP	%	110		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M16-Se20497	NCP	%	114		70-130	Pass	
TRH C6-C10	M16-Se20497	NCP	%	123		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-Se21764	NCP	%	71		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se21747	CP	%	104		70-130	Pass	
Magnesium	M16-Se21747	CP	%	98		70-130	Pass	
Potassium	M16-Se21747	CP	%	97		70-130	Pass	
Sodium	M16-Se21747	CP	%	95		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Chloride	M16-Se21751	CP	%	112			70-130	Pass	
Sulphate (as S)	M16-Se21751	CP	%	103			70-130	Pass	
Sulphate (as SO4)	M16-Se21751	CP	%	103			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Se20632	NCP	mg/L	0.05	0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Se21745	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Se21458	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Se21458	NCP	mg/L	0.09	0.08	2.0	30%	Pass	
Nitrate (as N)	M16-Se21458	NCP	mg/L	0.09	0.08	2.0	30%	Pass	
Nitrite (as N)	M16-Se21458	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se20632	NCP	mg/L	0.7	0.6	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Se19463	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Aluminium (filtered)	M16-Se20467	NCP	mg/L	1.5	1.5	1.0	30%	Pass	
Arsenic	M16-Se19238	NCP	mg/L	0.002	0.003	11	30%	Pass	
Arsenic (filtered)	A16-Se20936	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Se20471	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	M16-Se19238	NCP	mg/L	0.002	0.002	24	30%	Pass	
Chromium (filtered)	A16-Se20936	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Se19238	NCP	mg/L	0.022	0.023	6.0	30%	Pass	
Copper (filtered)	A16-Se20936	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Se19463	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	A16-Se20936	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Se19238	NCP	mg/L	0.002	0.002	7.0	30%	Pass	
Lead (filtered)	A16-Se20936	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Se19238	NCP	mg/L	0.083	0.090	8.0	30%	Pass	
Manganese (filtered)	A16-Se20936	NCP	mg/L	0.006	0.007	8.0	30%	Pass	
Mercury	M16-Se19238	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	A16-Se20936	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Se19238	NCP	mg/L	0.19	0.21	9.0	30%	Pass	
Nickel (filtered)	A16-Se20936	NCP	mg/L	0.003	0.003	6.0	30%	Pass	
Selenium	M16-Se19238	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	A16-Se20936	NCP	mg/L	0.003	0.004	16	30%	Pass	
Zinc	M16-Se19238	NCP	mg/L	1.4	1.5	7.0	30%	Pass	
Zinc (filtered)	A16-Se20936	NCP	mg/L	0.004	0.005	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Se21746	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M16-Se20496	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M16-Se21747	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-Se21747	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-Se21747	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M16-Se20496	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M16-Se20496	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M16-Se20496	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M16-Se20496	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M16-Se20496	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M16-Se20496	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M16-Se20496	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M16-Se20496	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-Se21747	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-Se21747	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-Se21747	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se21747	CP	mg/L	55	54	1.0	30%	Pass
Magnesium	M16-Se21747	CP	mg/L	8.5	8.4	1.0	30%	Pass
Potassium	M16-Se21747	CP	mg/L	19	19	3.0	30%	Pass
Sodium	M16-Se21747	CP	mg/L	75	74	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Se21750	CP	mg/L	57	57	<1	30%	Pass
Sulphate (as S)	M16-Se21750	CP	mg/L	6.5	6.4	1.2	30%	Pass
Sulphate (as SO ₄)	M16-Se21750	CP	mg/L	19	19	1.2	30%	Pass
Total Dissolved Solids	M16-Se21750	CP	mg/L	180	190	3.0	30%	Pass
Turbidity	M16-Se21750	CP	NTU	1.7	1.4	19	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Se21752	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Joseph Edouard	Senior Analyst-Organic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 26, 2016 8:17 AM**
Eurofins | mgt reference: **517203**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **517203-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Sep 26, 2016**

Client Sample ID			MW7 Water	MW17 Water	MW15 Water	MW14 Water
Sample Matrix			M16-Se23796	M16-Se23797	M16-Se23798	M16-Se23799
Eurofins mgt Sample No.			Sep 23, 2016	Sep 23, 2016	Sep 23, 2016	Sep 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	96	120	76	31
Chloride	1	mg/L	29	48	43	43
Conductivity (at 25°C)	1	uS/cm	140	230	260	190
pH	0.1	pH Units	4.2	4.1	4.4	4.4
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	7.6	16	19	9.3
Total Dissolved Solids	10	mg/L	98	160	180	Q19250
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.07	0.18	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	3.6	0.09	0.12	1.9
Nitrate (as N)	0.02	mg/L	3.6	0.09	0.12	1.9
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.3	0.2	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.3	0.4	0.2
Total Nitrogen (as N)	0.2	mg/L	4.3	0.4	0.5	2.1
Heavy Metals						
Aluminium	0.05	mg/L	1.8	4.2	3.4	2.0
Aluminium (filtered)	0.01	mg/L	0.60	3.1	0.58	0.63
Arsenic	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.006	0.007	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	18	3.2	11	1.0
Iron (filtered)	0.05	mg/L	0.21	0.43	0.27	0.21
Lead	0.001	mg/L	0.018	0.009	0.011	0.006

Client Sample ID			MW7 Water	MW17 Water	MW15 Water	MW14 Water
Sample Matrix			M16-Se23796	M16-Se23797	M16-Se23798	M16-Se23799
Eurofins mgt Sample No.			Sep 23, 2016	Sep 23, 2016	Sep 23, 2016	Sep 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	0.003	0.002	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.001	0.001
Selenium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.007	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	8.7	4.1	5.7	8.5
Magnesium	0.5	mg/L	2.9	4.5	9.3	5.2
Potassium	0.5	mg/L	1.4	0.6	1.6	< 0.5
Sodium	0.5	mg/L	14	31	26	21

Client Sample ID			MW13 Water	MW12 Water	MW11 Water	MW9 Water
Sample Matrix			M16-Se23800	M16-Se23801	M16-Se23802	M16-Se23803
Eurofins mgt Sample No.			Sep 23, 2016	Sep 23, 2016	Sep 23, 2016	Sep 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	52	38	59	26
Chloride	1	mg/L	43	53	78	16
Conductivity (at 25°C)	1	uS/cm	190	230	360	99
pH	0.1	pH Units	4.0	4.2	4.3	4.5
Phosphate total (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	12	29	5.1
Total Dissolved Solids	10	mg/L	110	140	250	69
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.03	0.05	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	0.37	0.07	1.5	1.2
Nitrate (as N)	0.02	mg/L	0.37	0.07	1.5	1.2
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.2	< 0.2	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.2	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	0.8	0.3	1.5	1.5

Client Sample ID			MW13 Water	MW12 Water	MW11 Water	MW9 Water
Sample Matrix			M16-Se23800	M16-Se23801	M16-Se23802	M16-Se23803
Eurofins mgt Sample No.			Sep 23, 2016	Sep 23, 2016	Sep 23, 2016	Sep 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	5.0	2.8	4.6	3.0
Aluminium (filtered)	0.01	mg/L	1.7	2.3	3.9	0.48
Arsenic	0.001	mg/L	0.002	0.002	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.002	0.002	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	17	6.0	1.6	4.9
Iron (filtered)	0.05	mg/L	0.59	0.29	0.23	0.29
Lead	0.001	mg/L	0.003	< 0.001	0.003	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Selenium (filtered)	0.005	mg/L	< 0.005	0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.7	1.7	0.7	5.0
Magnesium	0.5	mg/L	4.8	5.5	11	1.3
Potassium	0.5	mg/L	0.9	< 0.5	< 0.5	< 0.5
Sodium	0.5	mg/L	22	29	37	10.0

Client Sample ID			QC189 Water	QC190 Water
Sample Matrix			M16-Se23804	M16-Se23805
Eurofins mgt Sample No.			Sep 23, 2016	Sep 23, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.01	mg/L	< 0.01	< 0.01
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.001	mg/L	< 0.001	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.005	mg/L	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 26, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 26, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 26, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 26, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 27, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Sep 26, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 26, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 26, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 26, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 27, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 27, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 27, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 27, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 27, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 27, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 28, 2016	180 Day
Mobil Metals : Metals M15 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 26, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Sep 26, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 26, 2016 8:17 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 517203	Due: Oct 4, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X													X	X	X			X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X			X	X			X	X			X		
Brisbane Laboratory - NATA Site # 20794																																									
External Laboratory																																									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																				
1	MW7	Sep 23, 2016		Water	M16-Se23796	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	MW17	Sep 23, 2016		Water	M16-Se23797	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MW15	Sep 23, 2016		Water	M16-Se23798	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW14	Sep 23, 2016		Water	M16-Se23799	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW13	Sep 23, 2016		Water	M16-Se23800	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW12	Sep 23, 2016		Water	M16-Se23801	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW11	Sep 23, 2016		Water	M16-Se23802	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW9	Sep 23, 2016		Water	M16-Se23803	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	QC189	Sep 23, 2016		Water	M16-Se23804			X		X	X			X			X			X		X		X		X										X					
10	QC190	Sep 23, 2016		Water	M16-Se23805			X		X	X			X			X			X		X		X		X										X					

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 26, 2016 8:17 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 517203	Due: Oct 4, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail	Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271	X							X			X													X	X	X			X	X			X		X
Sydney Laboratory - NATA Site # 18217		X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X				X	X			X	X		X	
Brisbane Laboratory - NATA Site # 20794																																			
External Laboratory																																			
Test Counts	8	8	10	8	10	8	10	8	8	10	8	8	10	8	10	8	10	8	10	8	10	8	10	8	8	8	8	10	8	8	8	10	8	8	8

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.01			0.01	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	98		70-130	Pass	
Chloride	%	100		70-130	Pass	
Phosphate total (as P)	%	106		70-130	Pass	
Phosphorus reactive (as P)	%	114		70-130	Pass	
Sulphate (as S)	%	116		70-130	Pass	
Total Dissolved Solids	%	91		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	103		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	106		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	94		70-130	Pass	
Nitrate & Nitrite (as N)	%	95		70-130	Pass	
Nitrate (as N)	%	95		70-130	Pass	
Nitrite (as N)	%	102		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	96		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	93		70-130	Pass	
Aluminium (filtered)	%	93		70-130	Pass	
Arsenic	%	96		70-130	Pass	
Arsenic (filtered)	%	95		70-130	Pass	
Cadmium	%	97		70-130	Pass	
Cadmium (filtered)	%	96		70-130	Pass	
Chromium	%	95		70-130	Pass	
Chromium (filtered)	%	94		70-130	Pass	
Copper	%	94		70-130	Pass	
Copper (filtered)	%	95		70-130	Pass	
Iron	%	94		70-130	Pass	
Iron (filtered)	%	94		70-130	Pass	
Lead	%	96		70-130	Pass	
Lead (filtered)	%	96		70-130	Pass	
Manganese	%	93		70-130	Pass	
Manganese (filtered)	%	93		70-130	Pass	
Mercury	%	101		70-130	Pass	
Mercury (filtered)	%	100		70-130	Pass	
Nickel	%	92		70-130	Pass	
Nickel (filtered)	%	94		70-130	Pass	
Selenium	%	104		70-130	Pass	
Selenium (filtered)	%	107		70-130	Pass	
Zinc	%	96		70-130	Pass	
Zinc (filtered)	%	97		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	97		70-130	Pass	
Magnesium	%	107		70-130	Pass	
Potassium	%	90		70-130	Pass	
Sodium	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Se23796	CP	%	95		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Se26124	NCP	%	90		70-130	Pass	
Aluminium (filtered)	S16-Se23471	NCP	%	108		70-130	Pass	
Arsenic	M16-Se26124	NCP	%	88		70-130	Pass	
Arsenic (filtered)	S16-Se23471	NCP	%	116		70-130	Pass	
Cadmium	M16-Se26124	NCP	%	89		70-130	Pass	
Cadmium (filtered)	S16-Se23471	NCP	%	85		70-130	Pass	
Chromium	M16-Se26124	NCP	%	91		70-130	Pass	
Chromium (filtered)	S16-Se23471	NCP	%	98		70-130	Pass	
Copper	M16-Se26124	NCP	%	87		70-130	Pass	
Iron	M16-Se25925	NCP	%	91		70-130	Pass	
Lead	M16-Se26124	NCP	%	86		70-130	Pass	
Manganese	M16-Se26124	NCP	%	89		70-130	Pass	
Manganese (filtered)	S16-Se23471	NCP	%	97		70-130	Pass	
Mercury	M16-Se26124	NCP	%	89		70-130	Pass	
Nickel	M16-Se26124	NCP	%	86		70-130	Pass	
Nickel (filtered)	S16-Se23471	NCP	%	85		70-130	Pass	
Selenium	M16-Se26124	NCP	%	105		70-130	Pass	
Selenium (filtered)	S16-Se23471	NCP	%	94		70-130	Pass	
Zinc	M16-Se26124	NCP	%	83		70-130	Pass	
Zinc (filtered)	S16-Se23471	NCP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se23799	CP	%	72		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Se23800	CP	%	87		70-130	Pass	
Sulphate (as S)	M16-Se23800	CP	%	81		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Se23800	CP	%	80		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Se23800	CP	%	121		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Se23801	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se23801	CP	%	89		70-130	Pass	
Nitrate (as N)	M16-Se23801	CP	%	89		70-130	Pass	
Nitrite (as N)	M16-Se23801	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se23803	CP	%	100		70-130	Pass	
Magnesium	M16-Se23803	CP	%	111		70-130	Pass	
Potassium	M16-Se23803	CP	%	97		70-130	Pass	
Sodium	M16-Se23803	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Copper (filtered)	M16-Se20472	NCP	%	83		70-130	Pass	
Mercury (filtered)	M16-Se20472	NCP	%	118		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Se23796	CP	mg/L	0.7	0.8	13	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Se23796	CP	mg/L	1.8	1.8	<1	30%	Pass	
Aluminium (filtered)	S16-Se27528	NCP	mg/L	0.01	< 0.01	20	30%	Pass	
Arsenic	M16-Se23796	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Arsenic (filtered)	S16-Se27528	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Se23796	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	S16-Se27528	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-Se23796	CP	mg/L	0.005	0.004	34	30%	Fail	Q15
Chromium (filtered)	S16-Se27528	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Se23796	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S16-Se27528	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Se23796	CP	mg/L	18	18	1.0	30%	Pass	
Iron (filtered)	S16-Se27528	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Se23796	CP	mg/L	0.018	0.003	140	30%	Fail	Q15
Lead (filtered)	S16-Se27528	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Se23796	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	S16-Se27528	NCP	mg/L	0.012	0.012	<1	30%	Pass	
Mercury	M16-Se23796	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	S16-Se27528	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Se23796	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	S16-Se27528	NCP	mg/L	0.053	0.052	2.0	30%	Pass	
Selenium	M16-Se23796	CP	mg/L	0.001	< 0.001	40	30%	Fail	Q15
Selenium (filtered)	S16-Se27528	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M16-Se23796	CP	mg/L	0.007	< 0.005	98	30%	Fail	Q15
Zinc (filtered)	S16-Se27528	NCP	mg/L	0.006	0.005	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Se23799	CP	mg/L	31	32	4.0	30%	Pass	
Conductivity (at 25°C)	M16-Se23799	CP	uS/cm	190	240	<1	30%	Pass	
pH	M16-Se23799	CP	pH Units	4.4	4.4	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Se23799	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Se23799	CP	mg/L	250	220	12	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se23799	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Se23799	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Se23799	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Se23799	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Se23800	CP	mg/L	43	42	2.4	30%	Pass	
Phosphate total (as P)	M16-Se23800	CP	mg/L	0.07	0.07	12	30%	Pass	
Sulphate (as S)	M16-Se23800	CP	mg/L	11	12	4.9	30%	Pass	
Total Dissolved Solids	M16-Se23800	CP	mg/L	110	130	13	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Se23801	CP	mg/L	0.03	0.02	17	30%	Pass	
Nitrate & Nitrite (as N)	M16-Se23801	CP	mg/L	0.07	0.07	4.0	30%	Pass	
Nitrate (as N)	M16-Se23801	CP	mg/L	0.07	0.07	4.0	30%	Pass	
Nitrite (as N)	M16-Se23801	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se23802	CP	mg/L	4.6	4.5	1.0	30%	Pass
Arsenic	M16-Se23802	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Se23802	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se23802	CP	mg/L	0.002	0.002	13	30%	Pass
Copper	M16-Se23802	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se23802	CP	mg/L	1.6	1.5	4.0	30%	Pass
Lead	M16-Se23802	CP	mg/L	0.003	0.003	1.0	30%	Pass
Manganese	M16-Se23802	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Se23802	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se23802	CP	mg/L	0.002	0.002	6.0	30%	Pass
Selenium	M16-Se23802	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se23802	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se23802	CP	mg/L	0.7	0.6	12	30%	Pass
Magnesium	M16-Se23802	CP	mg/L	11	11	1.0	30%	Pass
Potassium	M16-Se23802	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Sodium	M16-Se23802	CP	mg/L	37	37	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se23803	CP	uS/cm	99	120	<1	30%	Pass
pH	M16-Se23803	CP	pH Units	4.5	4.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Carbonate Alkalinity (as CaCO ₃)	M16-Se23803	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se23803	CP	mg/L	< 10	< 10	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 28, 2016 8:20 AM**
Eurofins | mgt reference: **517515**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Sep 28, 2016 8:20 AM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	517515	Due:	Oct 6, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium (filtered)	Chromium	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X		X											X	X	X					X	X	X		X	X	X	X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X					
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
11	MW29	Sep 27, 2016		Water	M16-Se25934	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC191	Sep 27, 2016		Water	M16-Se25935			X	X	X			X			X			X	X	X	X	X	X	X	X	X				X								X					
13	QC192	Sep 27, 2016		Water	M16-Se25936			X	X	X			X			X			X	X	X	X	X	X	X	X	X				X								X					
14	SWL15-1	Sep 27, 2016		Water	M16-Se25937	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL15-2	Sep 27, 2016		Water	M16-Se25938	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL16-1	Sep 27, 2016		Water	M16-Se25939	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL16-2	Sep 27, 2016		Water	M16-Se25940	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL16-3	Sep 27, 2016		Water	M16-Se25941	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts					16	16	18	16	18	16	18	16	16	18	16	16	18	5	16	18	16	18	16	18	16	18	16	18	16	16	16	16	16	18	16	5	16	5	16	18	16	16	16	16

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

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The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **517515-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Sep 28, 2016

Client Sample ID			MW43 Water	MW39 Water	MW38 Water	MW37 Water
Sample Matrix			M16-Se25924	M16-Se25925	M16-Se25926	M16-Se25927
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	95	19	84	46
Chloride	1	mg/L	1300	90	220	48
Conductivity (at 25°C)	1	uS/cm	4000	380	840	150
pH	0.1	pH Units	6.4	6.6	6.2	4.8
Phosphate total (as P)	0.05	mg/L	0.36	0.66	0.64	0.27
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.62	0.60	0.16
Sulphate (as S)	5	mg/L	21	< 5	8.7	< 5
Total Dissolved Solids	10	mg/L	2900	330	580	170
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	150	40	67	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	150	40	67	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	1.2	0.29	0.69	0.16
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.7	1.41	1.71	.81
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.9	1.7	2.4	1.0
Total Nitrogen (as N)	0.2	mg/L	4.95	1.7	2.4	.97
Heavy Metals						
Aluminium	0.05	mg/L	13	0.24	1.8	0.26
Aluminium (filtered)	0.05	mg/L	1.1	0.24	0.43	0.24
Arsenic	0.001	mg/L	0.017	< 0.001	0.003	< 0.001
Arsenic (filtered)	0.001	mg/L	0.010	< 0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.023	< 0.001	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	0.007	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.7	0.72	1.5	0.05
Iron (filtered)	0.05	mg/L	0.34	0.60	0.55	< 0.05
Lead	0.001	mg/L	0.034	< 0.001	0.002	< 0.001

Client Sample ID			MW43 Water	MW39 Water	MW38 Water	MW37 Water
Sample Matrix			M16-Se25924	M16-Se25925	M16-Se25926	M16-Se25927
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	0.012	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.006	0.012	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.011	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.009	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.016	0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.017	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	< 0.005	0.24	< 0.005
Zinc (filtered)	0.005	mg/L	0.007	< 0.005	0.071	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	62	15	28	7.5
Magnesium	0.5	mg/L	100	6.5	14	2.7
Potassium	0.5	mg/L	6.9	5.7	17	1.5
Sodium	0.5	mg/L	500	41	85	14

Client Sample ID			MW36 Water	MW35 Water	MW33 Water	MW32 Water
Sample Matrix			M16-Se25928	M16-Se25929	M16-Se25930	M16-Se25931
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	13	84	59	34
Chloride	1	mg/L	15	73	77	190
Conductivity (at 25°C)	1	uS/cm	140	320	350	560
pH	0.1	pH Units	6.6	4.1	6.6	6.4
Phosphate total (as P)	0.05	mg/L	0.18	0.74	0.20	0.78
Phosphorus reactive (as P)	0.05	mg/L	0.08	0.58	0.10	0.84
Sulphate (as S)	5	mg/L	< 5	15	< 5	5.3
Total Dissolved Solids	10	mg/L	140	470	350	520
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	29	< 20	65	23
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	29	< 20	65	23
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.39	0.51	0.37
Nitrate & Nitrite (as N)	0.05	mg/L	3.7	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	3.7	0.05	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.38	5.21	0.79	2.83
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	5.6	1.3	3.2
Total Nitrogen (as N)	0.2	mg/L	5.1	5.6	1.3	3.2

Client Sample ID			MW36 Water	MW35 Water	MW33 Water	MW32 Water
Sample Matrix			M16-Se25928	M16-Se25929	M16-Se25930	M16-Se25931
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.10	0.50	0.66	0.69
Aluminium (filtered)	0.05	mg/L	0.06	0.43	0.31	0.65
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.09	0.29	0.71	0.26
Iron (filtered)	0.05	mg/L	< 0.05	0.20	0.16	0.19
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.008	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	17	10	24	8.3
Magnesium	0.5	mg/L	2.2	6.9	5.4	7.5
Potassium	0.5	mg/L	0.6	9.1	3.2	9.9
Sodium	0.5	mg/L	7.2	27	35	82

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	QC191 Water
Sample Matrix			M16-Se25932	M16-Se25933	M16-Se25934	M16-Se25935
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	74	15	63	-
Chloride	1	mg/L	69	32	59	-
Conductivity (at 25°C)	1	uS/cm	350	170	320	-
pH	0.1	pH Units	4.6	5.5	4.2	-
Phosphate total (as P)	0.05	mg/L	1.7	0.19	0.29	-
Phosphorus reactive (as P)	0.05	mg/L	1.6	< 0.05	0.11	-
Sulphate (as S)	5	mg/L	11	< 5	16	-
Total Dissolved Solids	10	mg/L	610	140	390	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	QC191 Water
Sample Matrix			M16-Se25932	M16-Se25933	M16-Se25934	M16-Se25935
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.18	0.04	0.33	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.8	< 0.05	-
Nitrate (as N)	0.02	mg/L	0.03	1.8	0.03	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	5.92	1.66	1.87	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.1	1.7	2.2	-
Total Nitrogen (as N)	0.2	mg/L	6.1	3.5	2.2	-
Heavy Metals						
Aluminium	0.05	mg/L	2.8	0.51	2.0	-
Aluminium (filtered)	0.05	mg/L	2.5	0.41	1.7	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	< 0.001	0.003	-
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.77	0.09	0.27	-
Iron (filtered)	0.05	mg/L	0.63	< 0.05	0.20	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	-
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	0.002	-
Selenium (filtered)	0.001	mg/L	0.002	0.001	0.002	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	7.4	5.3	-
Magnesium	0.5	mg/L	7.2	2.5	11	-
Potassium	0.5	mg/L	6.3	0.7	1.8	-
Sodium	0.5	mg/L	40	17	35	-

Client Sample ID			QC192	SWL15-1	SWL15-2	SWL16-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se25936	M16-Se25937	M16-Se25938	M16-Se25939
Date Sampled			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	32	27	19
Chloride	1	mg/L	-	110	110	130
Conductivity (at 25°C)	1	uS/cm	-	370	380	550
pH	0.1	pH Units	-	4.7	4.8	6.6
Phosphate total (as P)	0.05	mg/L	-	0.41	0.38	1.7
Phosphorus reactive (as P)	0.05	mg/L	-	0.15	0.14	1.5
Sulphate (as S)	5	mg/L	-	14	< 5	23
Total Dissolved Solids	10	mg/L	-	390	350	470
Turbidity	1	NTU	-	43	2.6	1.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	< 20	< 20	55
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	< 20	< 20	55
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.07	0.07	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	-	0.03	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	-	2.73	1.33	2.15
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	2.8	1.4	2.2
Total Nitrogen (as N)	0.2	mg/L	-	2.8	1.4	2.2
Heavy Metals						
Aluminium	0.05	mg/L	-	1.2	0.85	0.32
Aluminium (filtered)	0.05	mg/L	< 0.05	0.74	0.73	0.27
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.54	0.34	0.25
Iron (filtered)	0.05	mg/L	< 0.05	0.24	0.25	0.18
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.012	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005

Client Sample ID			QC192 Water	SWL15-1 Water	SWL15-2 Water	SWL16-1 Water
Sample Matrix			M16-Se25936	M16-Se25937	M16-Se25938	M16-Se25939
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016	Sep 27, 2016	Sep 27, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	-	5.1	5.3	19
Magnesium	0.5	mg/L	-	8.6	8.4	11
Potassium	0.5	mg/L	-	1.2	0.9	19
Sodium	0.5	mg/L	-	49	49	57
Pathogens						
E.coli	1	MPN/100mL	-	120	110	M15 <10
Thermotolerant Coliforms	1	MPN/100mL	-	410	330	31

Client Sample ID			SWL16-2 Water	SWL16-3 Water
Sample Matrix			M16-Se25940	M16-Se25941
Eurofins mgt Sample No.			Sep 27, 2016	Sep 27, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	11	< 10
Chloride	1	mg/L	100	100
Conductivity (at 25°C)	1	uS/cm	410	440
pH	0.1	pH Units	7.0	7.1
Phosphate total (as P)	0.05	mg/L	0.76	0.58
Phosphorus reactive (as P)	0.05	mg/L	0.53	0.45
Sulphate (as S)	5	mg/L	6.5	7.8
Total Dissolved Solids	10	mg/L	350	350
Turbidity	1	NTU	2.4	2.6
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	35	40
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	35	40
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	0.04	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.26	0.14
Nitrate (as N)	0.02	mg/L	0.24	0.11
Nitrite (as N)	0.02	mg/L	0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	1.56	1.86
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	1.9
Total Nitrogen (as N)	0.2	mg/L	1.86	2.04
Heavy Metals				
Aluminium	0.05	mg/L	0.36	0.38
Aluminium (filtered)	0.05	mg/L	0.25	0.25
Arsenic	0.001	mg/L	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	0.82	0.98

Client Sample ID			SWL16-2	SWL16-3
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Se25940	M16-Se25941
Date Sampled			Sep 27, 2016	Sep 27, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Iron (filtered)	0.05	mg/L	0.46	0.45
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005
Alkali Metals				
Calcium	0.5	mg/L	14	16
Magnesium	0.5	mg/L	7.0	7.5
Potassium	0.5	mg/L	9.3	10
Sodium	0.5	mg/L	43	45
Pathogens				
E.coli	1	MPN/100mL	120	31
Thermotolerant Coliforms	1	MPN/100mL	120	41

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 28, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 28, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 28, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 28, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Sep 28, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 28, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 28, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 03, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 28, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 28, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 28, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 28, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 28, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 28, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 28, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 30, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 30, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Sep 30, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Sep 28, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Sep 28, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Sep 28, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 517515 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Sep 28, 2016 8:20 AM Due: Oct 6, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X												X	X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X								X	X			
Brisbane Laboratory - NATA Site # 20794																																															
External Laboratory																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																										
1	MW43	Sep 27, 2016		Water	M16-Se25924	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW39	Sep 27, 2016		Water	M16-Se25925	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW38	Sep 27, 2016		Water	M16-Se25926	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW37	Sep 27, 2016		Water	M16-Se25927	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW36	Sep 27, 2016		Water	M16-Se25928	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	MW35	Sep 27, 2016		Water	M16-Se25929	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	MW33	Sep 27, 2016		Water	M16-Se25930	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	MW32	Sep 27, 2016		Water	M16-Se25931	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	MW31	Sep 27, 2016		Water	M16-Se25932	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
10	MW30	Sep 27, 2016		Water	M16-Se25933	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 28, 2016 8:20 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 517515	Due: Oct 6, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X		X											X	X	X					X	X	X		X	X	X	X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X						X	X					
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
11	MW29	Sep 27, 2016		Water	M16-Se25934	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC191	Sep 27, 2016		Water	M16-Se25935			X	X	X				X		X			X	X	X	X	X	X	X	X	X												X					
13	QC192	Sep 27, 2016		Water	M16-Se25936			X	X	X				X		X			X	X	X	X	X	X	X	X													X					
14	SWL15-1	Sep 27, 2016		Water	M16-Se25937	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL15-2	Sep 27, 2016		Water	M16-Se25938	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL16-1	Sep 27, 2016		Water	M16-Se25939	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL16-2	Sep 27, 2016		Water	M16-Se25940	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL16-3	Sep 27, 2016		Water	M16-Se25941	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts					16	16	18	16	18	16	18	16	16	18	16	16	18	5	16	18	16	18	16	18	16	18	16	18	16	16	16	16	16	18	16	5	16	5	16	18	16	16	16	16

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	105		70-130	Pass	
Chloride	%	126		70-130	Pass	
Phosphate total (as P)	%	100		70-130	Pass	
Phosphorus reactive (as P)	%	117		70-130	Pass	
Sulphate (as S)	%	125		70-130	Pass	
Total Dissolved Solids	%	101		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	103		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	110		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	96		70-130	Pass	
Nitrate & Nitrite (as N)	%	96		70-130	Pass	
Nitrate (as N)	%	96		70-130	Pass	
Nitrite (as N)	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	90		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	92		70-130	Pass	
Aluminium (filtered)	%	93		70-130	Pass	
Arsenic	%	96		70-130	Pass	
Arsenic (filtered)	%	90		70-130	Pass	
Cadmium	%	94		70-130	Pass	
Cadmium (filtered)	%	89		70-130	Pass	
Chromium	%	91		70-130	Pass	
Chromium (filtered)	%	89		70-130	Pass	
Copper	%	90		70-130	Pass	
Copper (filtered)	%	88		70-130	Pass	
Iron	%	90		70-130	Pass	
Iron (filtered)	%	92		70-130	Pass	
Lead	%	92		70-130	Pass	
Lead (filtered)	%	91		70-130	Pass	
Manganese	%	90		70-130	Pass	
Manganese (filtered)	%	92		70-130	Pass	
Mercury	%	94		70-130	Pass	
Mercury (filtered)	%	96		70-130	Pass	
Nickel	%	89		70-130	Pass	
Nickel (filtered)	%	93		70-130	Pass	
Selenium	%	104		70-130	Pass	
Selenium (filtered)	%	110		70-130	Pass	
Zinc	%	93		70-130	Pass	
Zinc (filtered)	%	89		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	105		70-130	Pass	
Magnesium	%	110		70-130	Pass	
Potassium	%	102		70-130	Pass	
Sodium	%	100		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Se26108	NCP	%	104		70-130	Pass	
Sulphate (as S)	M16-Se26101	NCP	%	107		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Se25712	NCP	%	73		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Se25706	NCP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se25706	NCP	%	95		70-130	Pass	
Nitrate (as N)	M16-Se25706	NCP	%	95		70-130	Pass	
Nitrite (as N)	M16-Se25706	NCP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se26110	NCP	%	81		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se25925	CP	%	78		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-Se25925	CP	%	94		70-130	Pass	
Arsenic	M16-Se25925	CP	%	96		70-130	Pass	
Cadmium	M16-Se25925	CP	%	95		70-130	Pass	
Chromium	M16-Se25925	CP	%	90		70-130	Pass	
Copper	M16-Se25925	CP	%	87		70-130	Pass	
Iron	M16-Se25925	CP	%	91		70-130	Pass	
Lead	M16-Se25925	CP	%	88		70-130	Pass	
Manganese	M16-Se25925	CP	%	88		70-130	Pass	
Mercury	M16-Se25925	CP	%	94		70-130	Pass	
Nickel	M16-Se25925	CP	%	87		70-130	Pass	
Selenium	M16-Se25925	CP	%	106		70-130	Pass	
Zinc	M16-Se25925	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se25926	CP	%	99		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Se25926	CP	%	98		70-130	Pass	
Magnesium	M16-Se25926	CP	%	97		70-130	Pass	
Potassium	M16-Se25926	CP	%	91		70-130	Pass	
Sodium	M16-Se25926	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se25927	CP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-Se25931	CP	%	98		70-130	Pass	
Arsenic	M16-Se25931	CP	%	99		70-130	Pass	
Cadmium	M16-Se25931	CP	%	96		70-130	Pass	
Chromium	M16-Se25931	CP	%	94		70-130	Pass	
Copper	M16-Se25931	CP	%	88		70-130	Pass	
Iron	M16-Se25931	CP	%	95		70-130	Pass	
Lead	M16-Se25931	CP	%	89		70-130	Pass	
Manganese	M16-Se25931	CP	%	90		70-130	Pass	
Mercury	M16-Se25931	CP	%	95		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Nickel	M16-Se25931	CP	%	89		70-130	Pass	
Selenium	M16-Se25931	CP	%	105		70-130	Pass	
Zinc	M16-Se25931	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se25933	CP	%	89		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Se25933	CP	%	92		70-130	Pass	
Aluminium (filtered)	M16-Se25933	CP	%	98		70-130	Pass	
Arsenic	M16-Se25933	CP	%	91		70-130	Pass	
Arsenic (filtered)	M16-Se25933	CP	%	98		70-130	Pass	
Cadmium	M16-Se25933	CP	%	91		70-130	Pass	
Cadmium (filtered)	M16-Se25933	CP	%	95		70-130	Pass	
Chromium	M16-Se25933	CP	%	86		70-130	Pass	
Chromium (filtered)	M16-Se25933	CP	%	90		70-130	Pass	
Copper	M16-Se25933	CP	%	84		70-130	Pass	
Copper (filtered)	M16-Se25933	CP	%	88		70-130	Pass	
Iron	M16-Se25933	CP	%	87		70-130	Pass	
Iron (filtered)	M16-Se25933	CP	%	87		70-130	Pass	
Lead	M16-Se25933	CP	%	89		70-130	Pass	
Lead (filtered)	M16-Se25933	CP	%	90		70-130	Pass	
Manganese	M16-Se25933	CP	%	91		70-130	Pass	
Manganese (filtered)	M16-Se25933	CP	%	93		70-130	Pass	
Mercury	M16-Se25933	CP	%	94		70-130	Pass	
Mercury (filtered)	M16-Se25933	CP	%	98		70-130	Pass	
Nickel	M16-Se25933	CP	%	88		70-130	Pass	
Nickel (filtered)	M16-Se25933	CP	%	92		70-130	Pass	
Selenium	M16-Se25933	CP	%	112		70-130	Pass	
Selenium (filtered)	M16-Se25933	CP	%	107		70-130	Pass	
Zinc	M16-Se25933	CP	%	85		70-130	Pass	
Zinc (filtered)	M16-Se25933	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Se25937	CP	%	104		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO3)	M16-Se25937	CP	%	128		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se25938	CP	%	98		70-130	Pass	
Magnesium	M16-Se25938	CP	%	99		70-130	Pass	
Potassium	M16-Se25938	CP	%	91		70-130	Pass	
Sodium	M16-Se25938	CP	%	90		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Se25939	CP	%	93		70-130	Pass	
Arsenic	M16-Se25939	CP	%	93		70-130	Pass	
Cadmium	M16-Se25939	CP	%	92		70-130	Pass	
Chromium	M16-Se25939	CP	%	89		70-130	Pass	
Copper	M16-Se25939	CP	%	84		70-130	Pass	
Iron	M16-Se25939	CP	%	90		70-130	Pass	
Lead	M16-Se25939	CP	%	88		70-130	Pass	
Manganese	M16-Se25939	CP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	M16-Se25939	CP	%	95			70-130	Pass	
Nickel	M16-Se25939	CP	%	89			70-130	Pass	
Selenium	M16-Se25939	CP	%	113			70-130	Pass	
Zinc	M16-Se25939	CP	%	87			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Se25924	CP	mg/L	95	85	11	30%	Pass	
Conductivity (at 25°C)	M16-Se25924	CP	uS/cm	4000	4000	<1	30%	Pass	
pH	M16-Se25924	CP	pH Units	6.4	6.4	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se25924	CP	mg/L	150	150	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Se25924	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Se25924	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Se25924	CP	mg/L	150	150	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-Se25706	NCP	mg/L	0.07	0.08	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Se25706	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Se25706	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Se25706	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Se26106	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Arsenic	M16-Se25924	CP	mg/L	0.017	0.018	2.0	30%	Pass	
Cadmium	M16-Se25924	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Se25924	CP	mg/L	0.023	0.025	6.0	30%	Pass	
Copper	M16-Se25924	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Lead	M16-Se25924	CP	mg/L	0.034	0.034	<1	30%	Pass	
Manganese	M16-Se25924	CP	mg/L	0.007	0.007	4.0	30%	Pass	
Mercury	M16-Se25924	CP	mg/L	0.0003	0.0003	3.0	30%	Pass	
Nickel	M16-Se25924	CP	mg/L	0.011	0.011	<1	30%	Pass	
Selenium	M16-Se25924	CP	mg/L	0.016	0.018	8.0	30%	Pass	
Zinc	M16-Se25924	CP	mg/L	0.011	0.013	10	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Se25925	CP	mg/L	19	25	29	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium (filtered)	M16-Se25925	CP	mg/L	0.24	0.23	2.0	30%	Pass	
Arsenic (filtered)	M16-Se25925	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Se25925	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Se25925	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Se25925	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Se25925	CP	mg/L	0.60	0.61	1.0	30%	Pass	
Lead (filtered)	M16-Se25925	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Se25925	CP	mg/L	0.012	0.012	1.0	30%	Pass	
Mercury (filtered)	M16-Se25925	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Se25925	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Se25925	CP	mg/L	0.001	< 0.001	61	30%	Fail	Q15
Zinc (filtered)	M16-Se25925	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se25926	CP	mg/L	28	28	<1	30%	Pass
Magnesium	M16-Se25926	CP	mg/L	14	14	<1	30%	Pass
Potassium	M16-Se25926	CP	mg/L	17	18	4.0	30%	Pass
Sodium	M16-Se25926	CP	mg/L	85	87	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se25927	CP	mg/L	170	160	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se25928	CP	uS/cm	140	140	<1	30%	Pass
pH	M16-Se25928	CP	pH Units	6.6	6.6	pass	30%	Pass
Phosphorus reactive (as P)	M16-Se25928	CP	mg/L	0.08	0.10	30	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se25928	CP	mg/L	29	29	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se25928	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se25928	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se25928	CP	mg/L	29	29	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Se25929	CP	mg/L	73	70	3.8	30%	Pass
Phosphate total (as P)	M16-Se25929	CP	mg/L	0.74	0.70	6.0	30%	Pass
Sulphate (as S)	M16-Se25929	CP	mg/L	15	12	27	30%	Pass
Total Dissolved Solids	M16-Se25929	CP	mg/L	470	480	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se25930	CP	mg/L	0.66	0.71	8.0	30%	Pass
Arsenic	M16-Se25930	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Se25930	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se25930	CP	mg/L	0.002	0.002	8.0	30%	Pass
Copper	M16-Se25930	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se25930	CP	mg/L	0.71	0.87	20	30%	Pass
Lead	M16-Se25930	CP	mg/L	0.001	0.001	15	30%	Pass
Manganese	M16-Se25930	CP	mg/L	0.008	0.008	3.0	30%	Pass
Mercury	M16-Se25930	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se25930	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Se25930	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se25930	CP	mg/L	0.006	0.006	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se25932	CP	mg/L	610	610	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se25932	CP	mg/L	2.8	2.8	1.0	30%	Pass
Aluminium (filtered)	M16-Se25932	CP	mg/L	2.5	2.5	1.0	30%	Pass
Arsenic	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Se25932	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Cadmium (filtered)	M16-Se25932	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se25932	CP	mg/L	0.003	0.003	3.0	30%	Pass
Chromium (filtered)	M16-Se25932	CP	mg/L	0.002	0.002	5.0	30%	Pass
Copper	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se25932	CP	mg/L	0.77	0.77	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M16-Se25932	CP	mg/L	0.63	0.63	1.0	30%	Pass
Lead	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Se25932	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Se25932	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Se25932	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Se25932	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Se25932	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se25932	CP	mg/L	0.003	0.003	5.0	30%	Pass
Nickel (filtered)	M16-Se25932	CP	mg/L	0.003	0.003	<1	30%	Pass
Selenium	M16-Se25932	CP	mg/L	0.002	0.002	7.0	30%	Pass
Selenium (filtered)	M16-Se25932	CP	mg/L	0.002	0.002	16	30%	Pass
Zinc	M16-Se25932	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Zinc (filtered)	M16-Se25932	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Se25934	CP	mg/L	63	62	3.0	30%	Pass
Conductivity (at 25°C)	M16-Se25934	CP	uS/cm	320	320	1.0	30%	Pass
pH	M16-Se25934	CP	pH Units	4.2	4.2	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se25934	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se25934	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se25934	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se25934	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se25937	CP	mg/L	390	380	3.0	30%	Pass
Turbidity	M16-Se25714	NCP	NTU	47	51	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se25938	CP	mg/L	350	340	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se25938	CP	mg/L	0.85	0.86	1.0	30%	Pass
Arsenic	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Se25938	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se25938	CP	mg/L	0.34	0.33	1.0	30%	Pass
Lead	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Se25938	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Se25938	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Se25938	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se25938	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se25938	CP	mg/L	5.3	5.3	1.0	30%	Pass
Magnesium	M16-Se25938	CP	mg/L	8.4	8.4	<1	30%	Pass
Potassium	M16-Se25938	CP	mg/L	0.9	0.9	3.0	30%	Pass
Sodium	M16-Se25938	CP	mg/L	49	49	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se25940	CP	uS/cm	410	420	1.0	30%	Pass
pH	M16-Se25940	CP	pH Units	7.0	7.0	pass	30%	Pass

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se25940	CP	mg/L	35	34	4.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se25940	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se25940	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se25940	CP	mg/L	35	34	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Se25941	CP	mg/L	0.58	0.70	19	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 29, 2016 8:45 AM**
Eurofins | mgt reference: **517711**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **517711-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Sep 29, 2016

Client Sample ID			MW54 Water	MW53 Water	MW51 Water	MW50 Water
Sample Matrix			M16-Se27132	M16-Se27133	M16-Se27134	M16-Se27135
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	21	57	96	45
Chloride	1	mg/L	610	2100	1500	2900
Conductivity (at 25°C)	1	uS/cm	2500	6100	5000	8100
pH	0.1	pH Units	7.4	5.7	6.0	6.1
Phosphate total (as P)	0.05	mg/L	0.67	0.30	0.20	0.26
Phosphorus reactive (as P)	0.05	mg/L	0.16	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	35	76	60	60
Total Dissolved Solids	10	mg/L	1600	3500	2800	4600
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	190	< 20	22	26
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	190	< 20	22	26
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.12	0.34	0.19
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	0.02	0.03	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.6	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.9	< 0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.9	< 0.2
Heavy Metals						
Aluminium	0.05	mg/L	0.61	2.8	0.34	4.3
Aluminium (filtered)	0.05	mg/L	< 0.05	0.11	0.05	< 0.05
Arsenic	0.001	mg/L	0.006	0.028	0.003	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00095	0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00077	< 0.00005	0.00005
Chromium	0.001	mg/L	0.002	0.003	0.002	0.015
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.002	0.006	0.007
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	9.2	8.7	13	6.1
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.14	< 0.05
Lead	0.001	mg/L	0.003	0.12	0.001	0.046

Client Sample ID			MW54 Water	MW53 Water	MW51 Water	MW50 Water
Sample Matrix			M16-Se27132	M16-Se27133	M16-Se27134	M16-Se27135
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	0.055	< 0.001	< 0.001
Manganese	0.005	mg/L	0.029	0.049	< 0.005	0.018
Manganese (filtered)	0.005	mg/L	0.019	0.043	< 0.005	0.016
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0003
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.010	0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.008	< 0.001	0.002
Selenium	0.001	mg/L	0.004	0.002	0.004	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.73	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.63	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	130	42	29	29
Magnesium	0.5	mg/L	43	190	130	180
Potassium	0.5	mg/L	5.8	18	37	37
Sodium	0.5	mg/L	240	1000	870	1400

Client Sample ID			MW49 Water	MW42 Water	MW41 Water	MW40 Water
Sample Matrix			M16-Se27136	M16-Se27137	M16-Se27138	M16-Se27139
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	38	33	110	64
Chloride	1	mg/L	1300	47	210	86
Conductivity (at 25°C)	1	uS/cm	4300	210	700	330
pH	0.1	pH Units	4.8	4.3	3.8	5.0
Phosphate total (as P)	0.05	mg/L	0.10	0.11	0.96	0.11
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.75	< 0.05
Sulphate (as S)	5	mg/L	68	< 5	7.0	< 5
Total Dissolved Solids	10	mg/L	2400	^{Q19} 180	^{Q19} 670	^{Q19} 290
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.26	1.1	0.32
Nitrate & Nitrite (as N)	0.05	mg/L	0.09	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.08	0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.1	4.4	0.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	5.5	0.9
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	5.5	0.9

Client Sample ID			MW49 Water	MW42 Water	MW41 Water	MW40 Water
Sample Matrix			M16-Se27136	M16-Se27137	M16-Se27138	M16-Se27139
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.8	0.67	1.7	1.6
Aluminium (filtered)	0.05	mg/L	0.09	0.34	1.4	1.4
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	< 0.00005	0.00016	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00012	< 0.00005
Chromium	0.001	mg/L	0.014	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.005	0.001	0.007	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Iron	0.05	mg/L	2.2	0.18	0.95	0.38
Iron (filtered)	0.05	mg/L	< 0.05	0.12	0.69	0.35
Lead	0.001	mg/L	0.011	0.003	0.001	0.001
Lead (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.009	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	0.008	< 0.005	0.005	< 0.005
Mercury	0.0001	mg/L	0.0008	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	< 0.005	0.039	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.034	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	21	1.4	8.5	2.1
Magnesium	0.5	mg/L	120	4.0	12	6.6
Potassium	0.5	mg/L	11	1.1	2.7	1.6
Sodium	0.5	mg/L	730	28	130	45

Client Sample ID			SWL21-1 Water	SWL21-2 Water	SWL21-3 Water	QC193 Water
Sample Matrix			M16-Se27140	M16-Se27141	M16-Se27142	M16-Se27143
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	28	36	11	-
Chloride	1	mg/L	1400	500	520	-
Conductivity (at 25°C)	1	uS/cm	4200	2000	1900	-
pH	0.1	pH Units	4.2	7.3	7.4	-
Phosphate total (as P)	0.05	mg/L	< 0.05	0.33	0.32	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.14	0.17	-
Sulphate (as S)	5	mg/L	41	12	11	-
Total Dissolved Solids	10	mg/L	2400	1100	1100	-
Turbidity	1	NTU	11	43	11	-

Client Sample ID			SWL21-1	SWL21-2	SWL21-3	QC193
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se27140	M16-Se27141	M16-Se27142	M16-Se27143
Date Sampled			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	54	56	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	54	56	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.04	0.02	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.08	0.08	-
Nitrate (as N)	0.02	mg/L	< 0.02	0.06	0.06	-
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.2	1.7	1.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	1.7	1.2	-
Total Nitrogen (as N)	0.2	mg/L	0.27	1.8	1.3	-
Heavy Metals						
Aluminium	0.05	mg/L	2.0	0.22	0.15	-
Aluminium (filtered)	0.05	mg/L	2.0	0.09	0.08	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00008	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	0.00008	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	< 0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.010	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	2.0	1.9	-
Iron (filtered)	0.05	mg/L	0.42	0.93	1.1	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.088	0.019	0.015	-
Manganese (filtered)	0.005	mg/L	0.093	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.016	0.002	0.002	-
Nickel (filtered)	0.001	mg/L	0.015	0.002	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.020	0.016	< 0.005	-
Zinc (filtered)	0.005	mg/L	0.021	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	19	21	21	-
Magnesium	0.5	mg/L	130	46	44	-
Potassium	0.5	mg/L	13	7.5	7.3	-
Sodium	0.5	mg/L	730	280	260	-
Pathogens						
E.coli	1	MPN/100mL	>2400	2000	1000	-
Thermotolerant Coliforms	1	MPN/100mL	>2400	3000	1200	-

Client Sample ID			QC194 Water M16-Se27144 Sep 28, 2016	SWL20-1 Water M16-Se27145 Sep 28, 2016	SWL20-2 Water M16-Se27146 Sep 28, 2016	SWL20-3 Water M16-Se27147 Sep 28, 2016
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	150	10	25
Chloride	1	mg/L	-	790	760	780
Conductivity (at 25°C)	1	uS/cm	-	2800	2900	2800
pH	0.1	pH Units	-	6.7	6.9	6.9
Phosphate total (as P)	0.05	mg/L	-	0.08	0.06	0.06
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	-	27	27	27
Total Dissolved Solids	10	mg/L	-	1700	1600	1600
Turbidity	1	NTU	-	11	8.4	3.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	22	23	24
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	22	23	24
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.02	0.02	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	-	< 0.02	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	1.3	1.1	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.3	1.1	1.1
Total Nitrogen (as N)	0.2	mg/L	-	1.3	1.1	1.1
Heavy Metals						
Aluminium	0.05	mg/L	-	0.10	0.08	0.08
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	< 0.001	0.008	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	3.0	1.6	1.4
Iron (filtered)	0.05	mg/L	< 0.05	0.54	0.48	0.51
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	0.010	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			QC194 Water	SWL20-1 Water	SWL20-2 Water	SWL20-3 Water
Sample Matrix			M16-Se27144	M16-Se27145	M16-Se27146	M16-Se27147
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	-	8.7	8.3	8.3
Magnesium	0.5	mg/L	-	51	49	49
Potassium	0.5	mg/L	-	11	10	10
Sodium	0.5	mg/L	-	520	490	460
Pathogens						
E.coli	1	MPN/100mL	-	340	650	290
Thermotolerant Coliforms	1	MPN/100mL	-	880	1400	1400

Client Sample ID			SWL17-1 Water	SWL17-2 Water	SWL17-3 Water	QC195 Water
Sample Matrix			M16-Se27148	M16-Se27149	M16-Se27150	M16-Se27151
Eurofins mgt Sample No.			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	70	75	75	40
Chloride	1	mg/L	110	140	130	2900
Conductivity (at 25°C)	1	uS/cm	460	500	520	8100
pH	0.1	pH Units	3.8	3.7	3.7	6.1
Phosphate total (as P)	0.05	mg/L	0.10	< 0.1	0.10	0.21
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	60
Total Dissolved Solids	10	mg/L	480	530	500	4800
Turbidity	1	NTU	2.5	7.2	3.1	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	28
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	28
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	0.02	0.18
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.4	2.9	2.5	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.4	2.9	2.5	< 0.2
Total Nitrogen (as N)	0.2	mg/L	2.4	2.9	2.5	< 0.2
Heavy Metals						
Aluminium	0.05	mg/L	0.94	1.3	1.1	3.6
Aluminium (filtered)	0.05	mg/L	0.73	0.88	0.90	0.07
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00012
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00010
Chromium	0.001	mg/L	< 0.001	0.001	0.001	0.013
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Copper	0.001	mg/L	0.001	0.001	0.001	0.006
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	0.69	0.77	0.75	5.0

Client Sample ID			SWL17-1	SWL17-2	SWL17-3	QC195
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Se27148	M16-Se27149	M16-Se27150	M16-Se27151
Date Sampled			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.51	0.58	0.60	< 0.05
Lead	0.001	mg/L	< 0.001	0.001	0.001	0.043
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.019
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.018
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.002	0.004	0.002	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.3	3.6	3.5	29
Magnesium	0.5	mg/L	7.5	8.0	7.6	180
Potassium	0.5	mg/L	1.4	1.4	1.3	38
Sodium	0.5	mg/L	66	69	70	1400
Pathogens						
E.coli	1	MPN/100mL	41	41	20	-
Thermotolerant Coliforms	1	MPN/100mL	63	63	31	-

Client Sample ID			SWL19-1	SWL19-2	SWL19-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Se27152	M16-Se27153	M16-Se27154
Date Sampled			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	< 10	10	< 10
Chloride	1	mg/L	990	900	940
Conductivity (at 25°C)	1	uS/cm	3000	3000	3000
pH	0.1	pH Units	6.7	6.7	7.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	29	28	29
Total Dissolved Solids	10	mg/L	1900	1900	1900
Turbidity	1	NTU	< 1	1.4	< 1
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.01	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.2

Client Sample ID			SWL19-1	SWL19-2	SWL19-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Se27152	M16-Se27153	M16-Se27154
Date Sampled			Sep 28, 2016	Sep 28, 2016	Sep 28, 2016
Test/Reference	LOR	Unit			
Nitrogens (speciated)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.2
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.09	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.003
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	14	14	14
Magnesium	0.5	mg/L	66	67	66
Potassium	0.5	mg/L	12	12	12
Sodium	0.5	mg/L	530	540	530
Pathogens					
E.coli	1	MPN/100mL	<1	M ¹⁵ <10	M ¹⁵ <10
Thermotolerant Coliforms	1	MPN/100mL	91	41	21

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 29, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 29, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 29, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Sep 29, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Sep 29, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 29, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 05, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 03, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 29, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 29, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 29, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 29, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 29, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 29, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 29, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 05, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 05, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 05, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Sep 29, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Sep 30, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Sep 30, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 29, 2016 8:45 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 517711	Due: Oct 7, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E coil	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X													X	X	X								X			X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X					X	X				
Brisbane Laboratory - NATA Site # 20794																																										
External Laboratory																																										
11	SWL21-3	Sep 28, 2016		Water	M16-Se27142	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC193	Sep 28, 2016		Water	M16-Se27143			X	X	X				X		X						X	X	X	X	X												X				
13	QC194	Sep 28, 2016		Water	M16-Se27144			X	X	X				X		X						X	X	X	X	X												X				
14	SWL20-1	Sep 28, 2016		Water	M16-Se27145	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL20-2	Sep 28, 2016		Water	M16-Se27146	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL20-3	Sep 28, 2016		Water	M16-Se27147	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL17-1	Sep 28, 2016		Water	M16-Se27148	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL17-2	Sep 28, 2016		Water	M16-Se27149	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	SWL17-3	Sep 28, 2016		Water	M16-Se27150	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	QC195	Sep 28, 2016		Water	M16-Se27151	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
21	SWL19-1	Sep 28, 2016		Water	M16-Se27152	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
22	SWL19-2	Sep 28, 2016		Water	M16-Se27153	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Sep 29, 2016 8:45 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 517711	Due: Oct 7, 2016
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	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail				Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271				X						X			X			X											X	X	X					X	X			X		X
Sydney Laboratory - NATA Site # 18217					X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X				X	X			X
Brisbane Laboratory - NATA Site # 20794																																								
External Laboratory																																								
23	SWL19-3	Sep 28, 2016	Water	M16-Se27154	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts					21	21	23	21	23	21	23	21	21	23	21	23	12	21	23	21	23	21	23	21	23	21	23	21	21	21	21	23	21	12	12	21	23	21	21	21

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	103			70-130	Pass	
Chloride	%	89			70-130	Pass	
Phosphate total (as P)	%	123			70-130	Pass	
Phosphorus reactive (as P)	%	111			70-130	Pass	
Sulphate (as S)	%	110			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	%	96			70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	%	88			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	103			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	%	94			70-130	Pass	
Nitrate (as N)	%	94			70-130	Pass	
Nitrite (as N)	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	94			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	98			70-130	Pass	
Aluminium (filtered)	%	91			70-130	Pass	
Arsenic	%	88			70-130	Pass	
Arsenic (filtered)	%	94			70-130	Pass	
Cadmium	%	91			70-130	Pass	
Cadmium (filtered)	%	95			70-130	Pass	
Chromium	%	97			70-130	Pass	
Chromium (filtered)	%	88			70-130	Pass	
Copper	%	94			70-130	Pass	
Copper (filtered)	%	92			70-130	Pass	
Iron	%	96			70-130	Pass	
Iron (filtered)	%	84			70-130	Pass	
Lead	%	96			70-130	Pass	
Lead (filtered)	%	91			70-130	Pass	
Manganese	%	96			70-130	Pass	
Manganese (filtered)	%	92			70-130	Pass	
Mercury	%	88			70-130	Pass	
Mercury (filtered)	%	71			70-130	Pass	
Nickel	%	96			70-130	Pass	
Nickel (filtered)	%	93			70-130	Pass	
Selenium	%	85			70-130	Pass	
Selenium (filtered)	%	82			70-130	Pass	
Zinc	%	87			70-130	Pass	
Zinc (filtered)	%	95			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	97			70-130	Pass	
Magnesium	%	102			70-130	Pass	
Potassium	%	92			70-130	Pass	
Sodium	%	94			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se27132	CP	%	103		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Copper (filtered)	S16-Se27540	NCP	%	73		70-130	Pass	
Iron (filtered)	M16-Se25933	NCP	%	87		70-130	Pass	
Lead (filtered)	S16-Se27540	NCP	%	74		70-130	Pass	
Mercury (filtered)	M16-Se25933	NCP	%	98		70-130	Pass	
Selenium (filtered)	S16-Se27540	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Sodium	S16-Se27627	NCP	%	70		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Se27133	CP	%	119		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Se27133	CP	%	124		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Se27133	CP	%	97		70-130	Pass	
Cadmium	M16-Se27133	CP	%	91		70-130	Pass	
Chromium	M16-Se27133	CP	%	104		70-130	Pass	
Copper	M16-Se27133	CP	%	87		70-130	Pass	
Iron	M16-Se27133	CP	%	120		70-130	Pass	
Lead	M16-Se27133	CP	%	89		70-130	Pass	
Manganese	M16-Se27133	CP	%	102		70-130	Pass	
Mercury	M16-Se27133	CP	%	88		70-130	Pass	
Nickel	M16-Se27133	CP	%	90		70-130	Pass	
Selenium	M16-Se27133	CP	%	92		70-130	Pass	
Zinc	M16-Se27133	CP	%	74		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Se27133	CP	%	81		70-130	Pass	
Magnesium	M16-Se27133	CP	%	107		70-130	Pass	
Potassium	M16-Se27133	CP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se27137	CP	%	89		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Se27137	CP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Se27137	CP	%	93		70-130	Pass	
Nitrate (as N)	M16-Se27137	CP	%	92		70-130	Pass	
Nitrite (as N)	M16-Se27137	CP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Se27142	CP	%	103		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Se27142	CP	%	106		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-Se27146	CP	%	110		70-130	Pass	
Arsenic	M16-Se27146	CP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	M16-Se27146	CP	%	96		70-130	Pass	
Chromium	M16-Se27146	CP	%	93		70-130	Pass	
Copper	M16-Se27146	CP	%	96		70-130	Pass	
Iron	M16-Se27146	CP	%	95		70-130	Pass	
Lead	M16-Se27146	CP	%	90		70-130	Pass	
Manganese	M16-Se27146	CP	%	102		70-130	Pass	
Mercury	M16-Se27146	CP	%	98		70-130	Pass	
Nickel	M16-Se27146	CP	%	98		70-130	Pass	
Selenium	M16-Se27146	CP	%	97		70-130	Pass	
Zinc	M16-Se27146	CP	%	93		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se27146	CP	%	96		70-130	Pass	
Magnesium	M16-Se27146	CP	%	93		70-130	Pass	
Potassium	M16-Se27146	CP	%	92		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Se27149	CP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Se27152	CP	%	128		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-Se27153	CP	%	103		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Se27153	CP	%	102		70-130	Pass	
Aluminium (filtered)	M16-Se27153	CP	%	103		70-130	Pass	
Arsenic	M16-Se27153	CP	%	94		70-130	Pass	
Arsenic (filtered)	M16-Se27153	CP	%	96		70-130	Pass	
Cadmium	M16-Se27153	CP	%	92		70-130	Pass	
Cadmium (filtered)	M16-Se27153	CP	%	93		70-130	Pass	
Chromium	M16-Se27153	CP	%	94		70-130	Pass	
Chromium (filtered)	M16-Se27153	CP	%	92		70-130	Pass	
Copper	M16-Se27153	CP	%	87		70-130	Pass	
Iron	M16-Se27153	CP	%	88		70-130	Pass	
Lead	M16-Se27153	CP	%	85		70-130	Pass	
Manganese	M16-Se27153	CP	%	96		70-130	Pass	
Manganese (filtered)	M16-Se27153	CP	%	97		70-130	Pass	
Mercury	M16-Se27153	CP	%	92		70-130	Pass	
Nickel	M16-Se27153	CP	%	89		70-130	Pass	
Nickel (filtered)	M16-Se27153	CP	%	86		70-130	Pass	
Selenium	M16-Se27153	CP	%	89		70-130	Pass	
Zinc	M16-Se27153	CP	%	86		70-130	Pass	
Zinc (filtered)	M16-Se27153	CP	%	88		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Se27153	CP	%	92		70-130	Pass	
Magnesium	M16-Se27153	CP	%	74		70-130	Pass	
Potassium	M16-Se27153	CP	%	91		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Se27154	CP	%	85		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Se27154	CP	%	128		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Se27132	CP	mg/L	21	22	2.0	30%	Pass	
Conductivity (at 25°C)	M16-Se27132	CP	uS/cm	2500	2500	<1	30%	Pass	
pH	M16-Se27132	CP	pH Units	7.4	7.4	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Se27132	CP	mg/L	0.16	0.16	2.4	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se27132	CP	mg/L	190	190	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Se27132	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Se27132	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Se27132	CP	mg/L	190	190	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Se27132	CP	mg/L	0.61	0.59	3.0	30%	Pass	
Arsenic	M16-Se27132	CP	mg/L	0.006	0.005	8.0	30%	Pass	
Cadmium	M16-Se27132	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Se27132	CP	mg/L	0.002	0.002	4.0	30%	Pass	
Copper	M16-Se27132	CP	mg/L	0.001	0.001	6.0	30%	Pass	
Iron	M16-Se27132	CP	mg/L	9.2	8.5	9.0	30%	Pass	
Lead	M16-Se27132	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Manganese	M16-Se27132	CP	mg/L	0.029	0.028	2.0	30%	Pass	
Mercury	M16-Se27132	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Se27132	CP	mg/L	0.002	0.001	9.0	30%	Pass	
Selenium	M16-Se27132	CP	mg/L	0.004	0.002	78	30%	Fail	Q15
Zinc	M16-Se27132	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Se27132	CP	mg/L	130	130	<1	30%	Pass	
Magnesium	M16-Se27132	CP	mg/L	43	43	1.0	30%	Pass	
Potassium	M16-Se27132	CP	mg/L	5.8	5.9	2.0	30%	Pass	
Sodium	M16-Se27132	CP	mg/L	240	240	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Se27133	CP	mg/L	57	62	9.0	30%	Pass	
Phosphorus reactive (as P)	M16-Se27133	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Se27135	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M16-Se27135	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Se27135	CP	mg/L	0.00005	< 0.00005	22	30%	Pass	
Chromium (filtered)	M16-Se27135	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Se27135	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Se27135	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-Se27135	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Se27135	CP	mg/L	0.016	0.016	2.0	30%	Pass	
Mercury (filtered)	M16-Se27135	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Se27135	CP	mg/L	0.002	0.002	2.0	30%	Pass	
Selenium (filtered)	M16-Se27135	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Se27135	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Se27136	CP	uS/cm	4300	4300	<1	30%	Pass	
pH	M16-Se27136	CP	pH Units	4.8	4.8	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Se27136	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se27136	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se27136	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se27136	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se27136	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Se27137	CP	mg/L	0.26	0.25	4.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Se27137	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Se27137	CP	mg/L	0.02	< 0.02	10	30%	Pass
Nitrite (as N)	M16-Se27137	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se27138	CP	uS/cm	700	710	<1	30%	Pass
pH	M16-Se27138	CP	pH Units	3.8	3.8	pass	30%	Pass
Total Dissolved Solids	M16-Se27138	CP	mg/L	670	660	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se27138	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se27138	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se27138	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se27138	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Se27140	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Se27141	CP	mg/L	0.09	0.09	1.0	30%	Pass
Arsenic (filtered)	M16-Se27141	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Se27141	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-Se27141	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Se27141	CP	mg/L	0.004	0.004	3.0	30%	Pass
Iron (filtered)	M16-Se27141	CP	mg/L	0.93	1.0	7.0	30%	Pass
Lead (filtered)	M16-Se27141	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Se27141	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Se27141	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Se27141	CP	mg/L	0.002	0.002	1.0	30%	Pass
Selenium (filtered)	M16-Se27141	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Se27141	CP	mg/L	0.006	0.007	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se27142	CP	uS/cm	1900	1900	<1	30%	Pass
pH	M16-Se27142	CP	pH Units	7.4	7.4	pass	30%	Pass
Phosphorus reactive (as P)	M16-Se27142	CP	mg/L	0.17	0.19	12	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se27142	CP	mg/L	56	56	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Se27142	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Se27142	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Se27142	CP	mg/L	56	56	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Se27142	CP	mg/L	1.2	1.5	17	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Se27145	CP	uS/cm	2800	2900	2.0	30%	Pass
pH	M16-Se27145	CP	pH Units	6.7	6.6	pass	30%	Pass
Phosphorus reactive (as P)	M16-Se27145	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M16-Se27145	CP	mg/L	1700	1700	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-Se27145	CP	mg/L	22	22	1.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-Se27145	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-Se27145	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-Se27145	CP	mg/L	22	22	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se27145	CP	mg/L	0.10	0.10	6.0	30%	Pass
Arsenic	M16-Se27145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Se27145	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se27145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Se27145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se27145	CP	mg/L	3.0	2.9	3.0	30%	Pass
Lead	M16-Se27145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Se27145	CP	mg/L	0.010	0.009	3.0	30%	Pass
Mercury	M16-Se27145	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se27145	CP	mg/L	0.002	0.002	6.0	30%	Pass
Selenium	M16-Se27145	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se27145	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se27145	CP	mg/L	8.7	8.5	2.0	30%	Pass
Magnesium	M16-Se27145	CP	mg/L	51	49	3.0	30%	Pass
Potassium	M16-Se27145	CP	mg/L	11	10	2.0	30%	Pass
Sodium	M16-Se27145	CP	mg/L	520	460	12	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Se27147	CP	mg/L	1600	1600	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Se27148	CP	mg/L	110	110	<1	30%	Pass
Phosphorus reactive (as P)	M16-Se27148	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as S)	M16-Se27148	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Se27149	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-Se27150	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Se27152	CP	mg/L	990	990	<1	30%	Pass
Sulphate (as S)	M16-Se27152	CP	mg/L	29	28	2.5	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Se27152	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Aluminium (filtered)	M16-Se27152	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium	M16-Se27152	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Cadmium (filtered)	M16-Se27152	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Se27152	CP	mg/L	0.07	0.06	13	30%	Pass
Iron (filtered)	M16-Se27152	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Se27152	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-Se27152	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Se27152	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-Se27152	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Se27152	CP	mg/L	0.003	0.003	<1	30%	Pass
Nickel (filtered)	M16-Se27152	CP	mg/L	0.002	0.002	2.0	30%	Pass
Selenium	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Se27152	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Se27152	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Zinc (filtered)	M16-Se27152	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Se27152	CP	mg/L	14	14	<1	30%	Pass
Magnesium	M16-Se27152	CP	mg/L	66	65	1.0	30%	Pass
Potassium	M16-Se27152	CP	mg/L	12	12	<1	30%	Pass
Sodium	M16-Se27152	CP	mg/L	530	520	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Se27153	CP	NTU	1.4	1.1	19	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Se27154	CP	mg/L	< 10	< 10	<1	30%	Pass
Phosphorus reactive (as P)	M16-Se27154	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Harriet Carter**
Project name: **NL_BASELINE GW_SW MONITORING**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 29, 2016 2:45 PM**
Eurofins | mgt reference: **517930**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Harriet Carter - Harriet.Carter@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number -
Site Number -

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **517930-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Sep 29, 2016

Client Sample ID			MW27 Water	MW26 Water	MW24 Water	MW23 Water
Sample Matrix			P16-Se28933	P16-Se28934	P16-Se28935	P16-Se28936
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	38	60	56	36
Chloride	1	mg/L	46	63	130	61
Conductivity (at 25°C)	1	uS/cm	170	290	520	390
pH	0.1	pH Units	4.7	4.1	4.5	6.6
Phosphate total (as P)	0.01	mg/L	< 0.05	< 0.05	0.01	< 0.01
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	13	18
Total Dissolved Solids	10	mg/L	^{Q19} 180	260	380	^{Q19} 300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	50
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	50
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.31	0.13	0.11	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.75	0.85	4.3
Nitrate (as N)	0.02	mg/L	< 0.02	0.72	0.84	4.3
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	1.0	0.5	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	1.1	0.6	0.4
Total Nitrogen (as N)	0.2	mg/L	0.9	1.9	1.5	4.7
Heavy Metals						
Aluminium	0.05	mg/L	0.77	3.7	5.0	1.4
Aluminium (filtered)	0.05	mg/L	0.72	2.0	1.3	0.39
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.005	0.008	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	0.006	0.003	0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	0.30	0.82	0.80	0.53
Iron (filtered)	0.05	mg/L	0.19	0.31	0.13	< 0.05
Lead	0.001	mg/L	< 0.001	0.002	0.003	< 0.001

Client Sample ID			MW27 Water	MW26 Water	MW24 Water	MW23 Water
Sample Matrix			P16-Se28933	P16-Se28934	P16-Se28935	P16-Se28936
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	0.002	0.001
Silver (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.031	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.6	3.5	4.8	37
Magnesium	0.5	mg/L	4.0	6.5	11	5.7
Potassium	0.5	mg/L	1.8	0.9	1.9	5.5
Sodium	0.5	mg/L	18	33	72	32

Client Sample ID			MW22 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			P16-Se28937	P16-Se28938	P16-Se28939	P16-Se28940
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	120	61	230	40
Chloride	1	mg/L	56	61	120	59
Conductivity (at 25°C)	1	uS/cm	540	320	500	270
pH	0.1	pH Units	3.4	4.2	3.5	4.4
Phosphate total (as P)	0.01	mg/L	< 0.01	< 0.01	< 0.05	< 0.01
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	50	15	23	13
Total Dissolved Solids	10	mg/L	^{Q19} 330	^{Q19} 200	^{Q19} 350	^{Q19} 190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.03	0.08	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.69	0.31	2.4
Nitrate (as N)	0.02	mg/L	0.06	0.68	0.29	2.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	4.8	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	< 0.2	4.9	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.7	5.2	2.8

Client Sample ID			MW22 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			P16-Se28937	P16-Se28938	P16-Se28939	P16-Se28940
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	21	9.8	120	17
Aluminium (filtered)	0.05	mg/L	17	7.4	16	1.6
Arsenic	0.001	mg/L	0.003	0.005	0.007	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00008	< 0.00005	0.00008	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00008	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.010	0.004	0.14	0.017
Chromium (filtered)	0.001	mg/L	0.004	0.001	0.003	< 0.001
Copper	0.001	mg/L	0.003	0.001	0.019	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	35	2.0	1.6	11
Iron (filtered)	0.05	mg/L	9.1	0.29	< 0.05	0.11
Lead	0.001	mg/L	0.007	0.002	0.14	0.024
Lead (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	< 0.0001	0.0013	0.0003
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.033	0.006	0.023	0.004
Nickel (filtered)	0.001	mg/L	0.027	0.006	0.007	0.002
Selenium	0.001	mg/L	0.003	< 0.001	0.018	0.002
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	< 0.005	0.006	0.016	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.006	0.009	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	16	< 0.5	2.3	10
Magnesium	0.5	mg/L	5.1	2.7	2.7	3.8
Potassium	0.5	mg/L	1.2	< 0.5	< 0.5	0.8
Sodium	0.5	mg/L	37	34	57	30

Client Sample ID			MW8 Water	MW6 Water	MW5 Water	MW1 Water
Sample Matrix			P16-Se28941	P16-Se28942	P16-Se28943	P16-Se28944
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	42	< 10	11
Chloride	1	mg/L	13	310	24	32
Conductivity (at 25°C)	1	uS/cm	130	1700	150	310
pH	0.1	pH Units	5.6	6.5	6.3	6.9
Phosphate total (as P)	0.01	mg/L	0.02	0.03	0.06	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	51	< 5	7.1
Total Dissolved Solids	10	mg/L	^{Q19} 110	^{Q19} 1200	^{Q19} 130	^{Q19} 210

Client Sample ID			MW8 Water	MW6 Water	MW5 Water	MW1 Water
Sample Matrix			P16-Se28941	P16-Se28942	P16-Se28943	P16-Se28944
Eurofins mgt Sample No.			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	140	32	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	140	32	72
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.21	0.13	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	7.5	32	< 0.05	3.0
Nitrate (as N)	0.02	mg/L	7.4	31	< 0.02	3.0
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	0.04	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	3.4	1.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	3.6	1.3	0.3
Total Nitrogen (as N)	0.2	mg/L	8.1	36	1.3	3.3
Heavy Metals						
Aluminium	0.05	mg/L	1.2	7.9	0.59	2.6
Aluminium (filtered)	0.05	mg/L	0.32	0.88	0.45	0.11
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.005	< 0.001	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Copper	0.001	mg/L	0.001	0.007	0.002	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.004	0.001	< 0.001
Iron	0.05	mg/L	0.08	0.83	0.40	0.79
Iron (filtered)	0.05	mg/L	< 0.05	0.10	0.36	< 0.05
Lead	0.001	mg/L	0.001	0.003	< 0.001	0.006
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.007	0.012	< 0.005	0.011
Zinc (filtered)	0.005	mg/L	0.006	0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	120	10	23
Magnesium	0.5	mg/L	1.6	25	2.8	2.9
Potassium	0.5	mg/L	< 0.5	33	3.2	19
Sodium	0.5	mg/L	6.5	130	13	19

Client Sample ID			QC198	QC199	QC197	QC196
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P16-Se28945	P16-Se28946	P16-Se28947	P16-Se28948
Date Sampled			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	45	-	-
Chloride	1	mg/L	34	61	-	-
Conductivity (at 25°C)	1	uS/cm	280	330	-	-
pH	0.1	pH Units	7.1	4.3	-	-
Phosphate total (as P)	0.01	mg/L	0.09	< 0.01	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	7.2	13	-	-
Total Dissolved Solids	10	mg/L	^{Q19} 200	^{Q19} 230	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	68	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	68	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.07	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	3.0	2.1	-	-
Nitrate (as N)	0.02	mg/L	3.0	2.1	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.1	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.2	-	-
Total Nitrogen (as N)	0.2	mg/L	3.4	3.3	-	-
Heavy Metals						
Aluminium	0.05	mg/L	4.9	31	-	-
Aluminium (filtered)	0.05	mg/L	0.11	1.6	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	0.006	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.031	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.007	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.3	15	-	-
Iron (filtered)	0.05	mg/L	< 0.05	0.08	< 0.05	< 0.05
Lead	0.001	mg/L	0.009	0.041	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0005	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.006	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.003	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.017	0.008	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			QC198	QC199	QC197	QC196
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P16-Se28945	P16-Se28946	P16-Se28947	P16-Se28948
Date Sampled			Sep 29, 2016	Sep 29, 2016	Sep 29, 2016	Sep 29, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	24	13	-	-
Magnesium	0.5	mg/L	3.0	3.5	-	-
Potassium	0.5	mg/L	19	0.8	-	-
Sodium	0.5	mg/L	19	28	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Sep 30, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Sep 30, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Sep 30, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Sep 30, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 03, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Sep 30, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Sep 30, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Sep 30, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Sep 30, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Sep 30, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Sep 30, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Sep 30, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Sep 30, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Sep 30, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Sep 30, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Sep 30, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 05, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Sep 30, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Sep 30, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 517930 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Sep 29, 2016 2:45 PM Due: Oct 6, 2016 Priority: 5 Day Contact Name: Harriet Carter
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Silver (filtered)	Silver (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)					
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X													X	X	X															X			
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X															
Brisbane Laboratory - NATA Site # 20794																																															
External Laboratory																																															
11	MW5	Sep 29, 2016		Water	P16-Se28943	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
12	MW1	Sep 29, 2016		Water	P16-Se28944	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
13	QC198	Sep 29, 2016		Water	P16-Se28945	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
14	QC199	Sep 29, 2016		Water	P16-Se28946	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
15	QC197	Sep 29, 2016		Water	P16-Se28947			X	X	X			X			X	X	X	X	X	X	X	X	X	X	X				X	X																
16	QC196	Sep 29, 2016		Water	P16-Se28948			X	X	X			X			X	X	X	X	X	X	X	X	X	X	X				X	X																
Test Counts					14	14	16	14	16	14	16	14	14	16	14	14	16	14	16	14	16	14	16	14	16	14	16	14	14	14	14	14	16	16	16	14	14	14	14	16	14	14	14	14			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	95			70-130	Pass	
Chloride	%	107			70-130	Pass	
Phosphate total (as P)	%	103			70-130	Pass	
Phosphorus reactive (as P)	%	113			70-130	Pass	
Sulphate (as S)	%	117			70-130	Pass	
Total Dissolved Solids	%	92			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	107			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	115			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	%	95			70-130	Pass	
Nitrate (as N)	%	95			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	111			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	103			70-130	Pass	
Aluminium (filtered)	%	96			70-130	Pass	
Arsenic	%	104			70-130	Pass	
Arsenic (filtered)	%	94			70-130	Pass	
Cadmium	%	105			70-130	Pass	
Cadmium (filtered)	%	98			70-130	Pass	
Chromium	%	102			70-130	Pass	
Chromium (filtered)	%	93			70-130	Pass	
Copper	%	102			70-130	Pass	
Copper (filtered)	%	93			70-130	Pass	
Iron	%	97			70-130	Pass	
Iron (filtered)	%	91			70-130	Pass	
Lead	%	102			70-130	Pass	
Lead (filtered)	%	96			70-130	Pass	
Manganese	%	103			70-130	Pass	
Manganese (filtered)	%	97			70-130	Pass	
Mercury	%	116			70-130	Pass	
Mercury (filtered)	%	96			70-130	Pass	
Nickel	%	102			70-130	Pass	
Nickel (filtered)	%	94			70-130	Pass	
Selenium	%	104			70-130	Pass	
Selenium (filtered)	%	95			70-130	Pass	
Silver (filtered)	%	96			70-130	Pass	
Zinc	%	104			70-130	Pass	
Zinc (filtered)	%	98			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	91			70-130	Pass	
Magnesium	%	96			70-130	Pass	
Potassium	%	91			70-130	Pass	
Sodium	%	96			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Se27967	NCP	%	113		70-130	Pass	
Phosphate total (as P)	B16-Se28397	NCP	%	94		70-130	Pass	
Sulphate (as S)	M16-Oc00054	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Oc00043	NCP	%	103		70-130	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Se27479	NCP	%	121		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Oc00046	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	S16-Se28810	NCP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	S16-Se28810	NCP	%	88		70-130	Pass	
Nitrate (as N)	S16-Se28810	NCP	%	88		70-130	Pass	
Nitrite (as N)	S16-Se28810	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Se27153	NCP	%	102		70-130	Pass	
Arsenic	M16-Se27153	NCP	%	94		70-130	Pass	
Cadmium	M16-Se27153	NCP	%	92		70-130	Pass	
Chromium	M16-Se27153	NCP	%	94		70-130	Pass	
Copper	M16-Se27153	NCP	%	87		70-130	Pass	
Iron	M16-Se27153	NCP	%	88		70-130	Pass	
Lead	M16-Se27153	NCP	%	85		70-130	Pass	
Manganese	M16-Se27153	NCP	%	96		70-130	Pass	
Mercury	M16-Se27153	NCP	%	92		70-130	Pass	
Nickel	M16-Se27153	NCP	%	89		70-130	Pass	
Selenium	M16-Se27153	NCP	%	89		70-130	Pass	
Zinc	M16-Se27153	NCP	%	86		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	P16-Se28934	CP	%	121		70-130	Pass	
Arsenic (filtered)	P16-Se28934	CP	%	103		70-130	Pass	
Cadmium (filtered)	P16-Se28934	CP	%	106		70-130	Pass	
Chromium (filtered)	P16-Se28934	CP	%	92		70-130	Pass	
Copper (filtered)	P16-Se28934	CP	%	73		70-130	Pass	
Iron (filtered)	P16-Se28934	CP	%	122		70-130	Pass	
Manganese (filtered)	P16-Se28934	CP	%	97		70-130	Pass	
Nickel (filtered)	P16-Se28934	CP	%	90		70-130	Pass	
Selenium (filtered)	P16-Se28934	CP	%	84		70-130	Pass	
Silver (filtered)	P16-Se28934	CP	%	82		70-130	Pass	
Zinc (filtered)	P16-Se28934	CP	%	107		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	P16-Se28937	CP	%	99		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	P16-Se28940	CP	%	90		70-130	Pass	
Magnesium	P16-Se28940	CP	%	96		70-130	Pass	
Potassium	P16-Se28940	CP	%	89		70-130	Pass	
Sodium	P16-Se28940	CP	%	87		70-130	Pass	
Spike - % Recovery								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphorus reactive (as P)	P16-Se28945	CP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead (filtered)	S16-Oc02836	NCP	%	73			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Se27520	NCP	uS/cm	4800	4800	<1	30%	Pass	
pH	M16-Oc00042	NCP	pH Units	5.7	5.7	pass	30%	Pass	
Phosphate total (as P)	B16-Se26494	NCP	mg/L	0.03	0.03	10	30%	Pass	
Total Dissolved Solids	P16-Se28933	CP	mg/L	180	200	9.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Se27520	NCP	mg/L	340	340	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Se27520	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Se27520	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Se27520	NCP	mg/L	340	340	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Se27152	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Aluminium (filtered)	P16-Se28933	CP	mg/L	0.72	0.74	3.0	30%	Pass	
Arsenic	M16-Se27152	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Se27152	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	P16-Se28933	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Se27152	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Se27152	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Se27152	NCP	mg/L	0.07	0.06	13	30%	Pass	
Iron (filtered)	P16-Se28933	CP	mg/L	0.19	0.20	8.0	30%	Pass	
Lead	M16-Se27152	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Se27152	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	P16-Se28933	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Se27152	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	P16-Se28933	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Se27152	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Nickel (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Se27152	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	P16-Se28933	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver (filtered)	P16-Se28933	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M16-Se27152	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	P16-Se28933	CP	mg/L	0.031	0.031	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	P16-Se28935	CP	mg/L	380	380	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	P16-Se28936	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	P16-Se28936	CP	mg/L	0.4	0.6	42	30%	Fail	Q15

Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	P16-Se28939	CP	mg/L	350	350	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P16-Se28939	CP	mg/L	2.3	2.4	6.0	30%	Pass
Magnesium	P16-Se28939	CP	mg/L	2.7	2.8	3.0	30%	Pass
Potassium	P16-Se28939	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Sodium	P16-Se28939	CP	mg/L	57	58	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	P16-Se28940	CP	mg/L	59	58	<1	30%	Pass
Sulphate (as S)	P16-Se28940	CP	mg/L	13	13	1.4	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	P16-Se28943	CP	mg/L	24	27	11	30%	Pass
Total Dissolved Solids	P16-Se28943	CP	mg/L	130	170	22	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P16-Se28943	CP	mg/L	0.45	0.45	<1	30%	Pass
Arsenic (filtered)	P16-Se28943	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P16-Se28943	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P16-Se28943	CP	mg/L	0.003	< 0.001	120	30%	Fail Q15
Copper (filtered)	P16-Se28943	CP	mg/L	0.001	0.001	1.0	30%	Pass
Iron (filtered)	P16-Se28943	CP	mg/L	0.36	0.34	4.0	30%	Pass
Lead (filtered)	P16-Se28943	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P16-Se28943	CP	mg/L	0.006	0.006	6.0	30%	Pass
Mercury (filtered)	P16-Se28943	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	P16-Se28943	CP	mg/L	0.002	< 0.001	81	30%	Fail Q15
Selenium (filtered)	P16-Se28943	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Silver (filtered)	P16-Se28943	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Zinc (filtered)	P16-Se28943	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	P16-Se28944	CP	mg/L	< 0.05	0.07	40	30%	Fail Q15
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	P16-Se28944	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate & Nitrite (as N)	P16-Se28944	CP	mg/L	3.0	3.0	<1	30%	Pass
Nitrate (as N)	P16-Se28944	CP	mg/L	3.0	3.0	<1	30%	Pass
Nitrite (as N)	P16-Se28944	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	P16-Se28945	CP	mg/L	34	33	2.4	30%	Pass
Sulphate (as S)	P16-Se28945	CP	mg/L	7.2	7.1	1.4	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	P16-Se28946	CP	mg/L	45	47	4.0	30%	Pass
Phosphorus reactive (as P)	P16-Se28946	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 4, 2016 7:44 AM**
Eurofins | mgt reference: **518100**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No metals containers provided

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **518100-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Oct 04, 2016

Client Sample ID			MW47 Water M16-Oc00970 Oct 03, 2016	MW46 Water M16-Oc00971 Oct 03, 2016	MW45 Water M16-Oc00972 Oct 03, 2016	SWL18-1 Water M16-Oc00973 Oct 03, 2016
Sample Matrix	LOR	Unit				
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	54	< 10	< 10
Chloride	1	mg/L	460	2800	440	490
Conductivity (at 25°C)	1	uS/cm	1900	8900	1700	1800
pH	0.1	pH Units	8.3	7.9	8.2	7.7
Phosphate total (as P)	0.05	mg/L	0.14	0.17	0.09	0.25
Phosphorus reactive (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	0.18
Sulphate (as S)	5	mg/L	8.5	120	< 5	14
Total Dissolved Solids	10	mg/L	1200	6100	1000	1200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	240	460	220	61
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	250	460	220	61
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	0.47	0.23	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.3	< 0.2	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	0.2	1.6
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.8	0.2	1.7
Heavy Metals						
Aluminium	0.05	mg/L	1.3	3.1	0.10	0.19
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Arsenic	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	0.008	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	5.3	0.11	2.0
Iron (filtered)	0.05	mg/L	< 0.05	0.10	< 0.05	1.2
Lead	0.001	mg/L	0.003	0.004	< 0.001	< 0.001

Client Sample ID			MW47 Water	MW46 Water	MW45 Water	SWL18-1 Water
Sample Matrix			M16-Oc00970	M16-Oc00971	M16-Oc00972	M16-Oc00973
Eurofins mgt Sample No.			Oct 03, 2016	Oct 03, 2016	Oct 03, 2016	Oct 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.014	0.058	< 0.005	0.020
Manganese (filtered)	0.005	mg/L	< 0.005	0.049	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.006	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	0.003	0.002	< 0.001	0.002
Selenium	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.22	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.11	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	45	200	65	25
Magnesium	0.5	mg/L	35	250	38	46
Potassium	0.5	mg/L	3.2	7.3	4.6	7.6
Sodium	0.5	mg/L	290	1600	220	290

Client Sample ID			SWL18-2 Water	SWL18-3 Water	SWL4-1 Water	SWL4-2 Water
Sample Matrix			M16-Oc00974	M16-Oc00975	M16-Oc00976	M16-Oc00977
Eurofins mgt Sample No.			Oct 03, 2016	Oct 03, 2016	Oct 03, 2016	Oct 03, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	10	< 10	< 10
Chloride	1	mg/L	540	530	130	130
Conductivity (at 25°C)	1	uS/cm	2000	1900	550	550
pH	0.1	pH Units	7.8	7.5	6.4	6.5
Phosphate total (as P)	0.05	mg/L	0.29	0.29	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.18	0.18	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	14	14	25	25
Total Dissolved Solids	10	mg/L	1200	1200	360	360
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	59	68	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	59	68	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.05	0.16	0.10
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.06	0.23	0.24
Nitrate (as N)	0.02	mg/L	< 0.02	0.06	0.21	0.24
Nitrite (as N)	0.02	mg/L	0.04	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.8	1.6	0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	1.7	0.4	< 0.2
Total Nitrogen (as N)	0.2	mg/L	1.9	1.8	0.6	0.2

Client Sample ID			SWL18-2	SWL18-3	SWL4-1	SWL4-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc00974	M16-Oc00975	M16-Oc00976	M16-Oc00977
Date Sampled			Oct 03, 2016	Oct 03, 2016	Oct 03, 2016	Oct 03, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.21	0.20	0.22	0.17
Aluminium (filtered)	0.05	mg/L	0.13	0.12	0.11	0.10
Arsenic	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.1	2.0	0.52	0.25
Iron (filtered)	0.05	mg/L	1.2	1.1	0.11	0.08
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.021	0.020	0.009	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.008	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.011	0.011
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.009	0.010
Alkali Metals						
Calcium	0.5	mg/L	26	26	22	22
Magnesium	0.5	mg/L	46	46	14	14
Potassium	0.5	mg/L	7.7	7.7	5.0	4.9
Sodium	0.5	mg/L	290	290	72	72

Client Sample ID			SWL4-3	SWL5-1	QC200	QC201
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc00978	M16-Oc00979	M16-Oc00980	M16-Oc00981
Date Sampled			Oct 03, 2016	Oct 03, 2016	Oct 03, 2016	Oct 03, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	13	-	-
Chloride	1	mg/L	130	26	-	-
Conductivity (at 25°C)	1	uS/cm	540	130	-	-
pH	0.1	pH Units	6.9	5.0	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	25	6.0	-	-
Total Dissolved Solids	10	mg/L	360	^{Q19} 130	-	-
Turbidity	1	NTU	2.7	2.2	-	-

Client Sample ID			SWL4-3	SWL5-1	QC200	QC201
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc00978	M16-Oc00979	M16-Oc00980	M16-Oc00981
Date Sampled			Oct 03, 2016	Oct 03, 2016	Oct 03, 2016	Oct 03, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.01	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.23	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	0.23	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.6	-	-
Total Nitrogen (as N)	0.2	mg/L	0.2	0.6	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.65	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	0.62	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.33	0.17	-	-
Iron (filtered)	0.05	mg/L	< 0.05	0.13	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	0.007	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	21	5.0	-	-
Magnesium	0.5	mg/L	14	2.4	-	-
Potassium	0.5	mg/L	5.0	< 0.5	-	-
Sodium	0.5	mg/L	71	14	-	-
Pathogens						
E.coli	1	MPN/100mL	12	74	-	-
Thermotolerant Coliforms	1	MPN/100mL	390	130	-	-

Client Sample ID			QC203	QC207
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Oc00982	M16-Oc00983
Date Sampled			Oct 03, 2016	Oct 03, 2016
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10
Chloride	1	mg/L	540	130
Conductivity (at 25°C)	1	uS/cm	2000	560
pH	0.1	pH Units	7.5	6.9
Phosphate total (as P)	0.05	mg/L	0.27	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.18	< 0.05
Sulphate (as S)	5	mg/L	13	26
Total Dissolved Solids	10	mg/L	1200	370
Turbidity	1	NTU	9.6	2.6
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	63	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	63	< 20
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	0.03	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.23
Nitrate (as N)	0.02	mg/L	0.03	0.23
Nitrite (as N)	0.02	mg/L	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.2	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.5
Total Nitrogen (as N)	0.2	mg/L	1.3	0.7
Heavy Metals				
Aluminium	0.05	mg/L	0.22	0.14
Aluminium (filtered)	0.05	mg/L	0.13	0.07
Arsenic	0.001	mg/L	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.007	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	2.1	0.32
Iron (filtered)	0.05	mg/L	1.1	0.09
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	0.021	0.010
Manganese (filtered)	0.005	mg/L	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	0.009

Client Sample ID			QC203	QC207
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Oc00982	M16-Oc00983
Date Sampled			Oct 03, 2016	Oct 03, 2016
Test/Reference	LOR	Unit		
Alkali Metals				
Calcium	0.5	mg/L	26	22
Magnesium	0.5	mg/L	49	14
Potassium	0.5	mg/L	7.9	5.0
Sodium	0.5	mg/L	310	73
Pathogens				
E.coli	1	MPN/100mL	280	13
Thermotolerant Coliforms	1	MPN/100mL	400	200

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 06, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 04, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 04, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 04, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 04, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 04, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 04, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 04, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 04, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 04, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 04, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 04, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 04, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 04, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 04, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 04, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 10, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 10, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 10, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Oct 10, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 04, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 04, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 518100 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Oct 4, 2016 7:44 AM Due: Oct 11, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X						X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X						X	X		X
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																							
1	MW47	Oct 03, 2016		Water	M16-Oc00970	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW46	Oct 03, 2016		Water	M16-Oc00971	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW45	Oct 03, 2016		Water	M16-Oc00972	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	SWL18-1	Oct 03, 2016		Water	M16-Oc00973	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	SWL18-2	Oct 03, 2016		Water	M16-Oc00974	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	SWL18-3	Oct 03, 2016		Water	M16-Oc00975	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	SWL4-1	Oct 03, 2016		Water	M16-Oc00976	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	SWL4-2	Oct 03, 2016		Water	M16-Oc00977	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	SWL4-3	Oct 03, 2016		Water	M16-Oc00978	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
10	SWL5-1	Oct 03, 2016		Water	M16-Oc00979	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 4, 2016 7:44 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 518100	Due: Oct 11, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X						X	X				X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X			X		
Brisbane Laboratory - NATA Site # 20794																																														
External Laboratory																																														
11	QC200	Oct 03, 2016		Water	M16-Oc00980			X	X	X	X			X			X							X	X	X	X	X														X				
12	QC201	Oct 03, 2016		Water	M16-Oc00981			X	X	X	X			X			X							X	X	X	X	X														X				
13	QC203	Oct 03, 2016		Water	M16-Oc00982	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	QC207	Oct 03, 2016		Water	M16-Oc00983	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts						12	12	14	12	14	12	14	12	12	14	12	12	14	4	12	14	12	14	12	14	12	14	12	14	12	12	12	12	12	12	14	12	4	12	4	12	14	12	12	12	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	92		70-130	Pass	
Chloride	%	103		70-130	Pass	
Phosphate total (as P)	%	97		70-130	Pass	
Phosphorus reactive (as P)	%	111		70-130	Pass	
Sulphate (as S)	%	115		70-130	Pass	
Total Dissolved Solids	%	92		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	102		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	112		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	%	91		70-130	Pass	
Nitrate (as N)	%	91		70-130	Pass	
Nitrite (as N)	%	108		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	96		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	88		70-130	Pass	
Aluminium (filtered)	%	93		70-130	Pass	
Arsenic	%	101		70-130	Pass	
Arsenic (filtered)	%	96		70-130	Pass	
Cadmium	%	101		70-130	Pass	
Cadmium (filtered)	%	99		70-130	Pass	
Chromium	%	97		70-130	Pass	
Chromium (filtered)	%	96		70-130	Pass	
Copper	%	95		70-130	Pass	
Copper (filtered)	%	100		70-130	Pass	
Iron	%	90		70-130	Pass	
Iron (filtered)	%	88		70-130	Pass	
Lead	%	99		70-130	Pass	
Lead (filtered)	%	101		70-130	Pass	
Manganese	%	96		70-130	Pass	
Manganese (filtered)	%	96		70-130	Pass	
Mercury	%	107		70-130	Pass	
Mercury (filtered)	%	100		70-130	Pass	
Nickel	%	91		70-130	Pass	
Nickel (filtered)	%	93		70-130	Pass	
Selenium	%	115		70-130	Pass	
Selenium (filtered)	%	99		70-130	Pass	
Zinc	%	96		70-130	Pass	
Zinc (filtered)	%	96		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	102		70-130	Pass	
Magnesium	%	100		70-130	Pass	
Potassium	%	97		70-130	Pass	
Sodium	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Oc00970	CP	%	124		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Oc00474	NCP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc00474	NCP	%	86		70-130	Pass	
Nitrate (as N)	M16-Oc00474	NCP	%	86		70-130	Pass	
Nitrite (as N)	M16-Oc00474	NCP	%	114		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Oc00970	CP	%	98		70-130	Pass	
Magnesium	M16-Oc00970	CP	%	100		70-130	Pass	
Potassium	M16-Oc00970	CP	%	94		70-130	Pass	
Sodium	M16-Oc00970	CP	%	39		70-130	Fail	Q08
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc00971	CP	%	83		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Oc00973	CP	%	101		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-Oc00974	CP	%	98		70-130	Pass	
Arsenic	M16-Oc00974	CP	%	98		70-130	Pass	
Cadmium	M16-Oc00974	CP	%	99		70-130	Pass	
Chromium	M16-Oc00974	CP	%	94		70-130	Pass	
Copper	M16-Oc00974	CP	%	84		70-130	Pass	
Iron	M16-Oc00974	CP	%	86		70-130	Pass	
Lead	M16-Oc00974	CP	%	92		70-130	Pass	
Manganese	M16-Oc00974	CP	%	95		70-130	Pass	
Mercury	M16-Oc00974	CP	%	97		70-130	Pass	
Nickel	M16-Oc00974	CP	%	83		70-130	Pass	
Selenium	M16-Oc00974	CP	%	110		70-130	Pass	
Zinc	M16-Oc00974	CP	%	86		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Oc00974	CP	%	88		70-130	Pass	
Magnesium	M16-Oc00974	CP	%	93		70-130	Pass	
Potassium	M16-Oc00974	CP	%	90		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Oc00983	CP	%	89		70-130	Pass	
Phosphate total (as P)	M16-Oc00983	CP	%	120		70-130	Pass	
Phosphorus reactive (as P)	M16-Oc00983	CP	%	89		70-130	Pass	
Sulphate (as S)	M16-Oc00983	CP	%	81		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc00983	CP	%	110		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P16-Oc04403	NCP	mg/L	15	16	9.0	30%	Pass	
Conductivity (at 25°C)	M16-Oc00970	CP	uS/cm	1900	1700	11	30%	Pass	
pH	M16-Oc00970	CP	pH Units	8.3	8.3	pass	30%	Pass	
Phosphate total (as P)	M16-Oc00970	CP	mg/L	0.14	0.15	12	30%	Pass	
Phosphorus reactive (as P)	M16-Oc00970	CP	mg/L	0.08	0.11	35	30%	Fail	Q15
Sulphate (as S)	M16-Oc00995	NCP	mg/L	6.9	6.9	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc00970	CP	mg/L	240	230	7.0	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc00970	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc00970	CP	mg/L	250	230	6.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Oc00474	NCP	mg/L	0.05	0.05	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Oc00474	NCP	mg/L	0.59	0.60	<1	30%	Pass	
Nitrate (as N)	M16-Oc00474	NCP	mg/L	0.59	0.60	<1	30%	Pass	
Nitrite (as N)	M16-Oc00474	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Oc00970	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M16-Oc00970	CP	mg/L	0.001	0.001	5.0	30%	Pass	
Cadmium (filtered)	M16-Oc00970	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc00970	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc00970	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Oc00970	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-Oc00970	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc00970	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M16-Oc00970	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc00970	CP	mg/L	0.003	0.003	<1	30%	Pass	
Selenium (filtered)	M16-Oc00970	CP	mg/L	0.002	0.001	34	30%	Fail	Q15
Zinc (filtered)	M16-Oc00970	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Oc00972	CP	mg/L	0.2	< 0.2	200	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Oc00973	CP	mg/L	0.19	0.19	2.0	30%	Pass	
Arsenic	M16-Oc00973	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Oc00973	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Oc00973	CP	mg/L	0.001	0.001	10	30%	Pass	
Copper	M16-Oc00973	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Oc00973	CP	mg/L	2.0	2.0	<1	30%	Pass	
Lead	M16-Oc00973	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Oc00973	CP	mg/L	0.020	0.020	1.0	30%	Pass	
Mercury	M16-Oc00973	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc00973	CP	mg/L	0.002	0.002	2.0	30%	Pass	
Selenium	M16-Oc00973	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Oc00973	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Oc00973	CP	mg/L	25	26	3.0	30%	Pass	
Magnesium	M16-Oc00973	CP	mg/L	46	46	1.0	30%	Pass	
Potassium	M16-Oc00973	CP	mg/L	7.6	7.7	2.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Oc00978	CP	NTU	2.7	2.8	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Oc00978	CP	mg/L	0.15	0.14	2.0	30%	Pass
Arsenic	M16-Oc00978	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Oc00978	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Oc00978	CP	mg/L	0.001	0.002	46	30%	Fail Q15
Copper	M16-Oc00978	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Oc00978	CP	mg/L	0.33	0.33	<1	30%	Pass
Lead	M16-Oc00978	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Oc00978	CP	mg/L	< 0.005	0.006	18	30%	Pass
Mercury	M16-Oc00978	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Oc00978	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Oc00978	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Oc00978	CP	mg/L	0.012	0.011	5.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Oc00978	CP	mg/L	21	21	1.0	30%	Pass
Magnesium	M16-Oc00978	CP	mg/L	14	14	<1	30%	Pass
Potassium	M16-Oc00978	CP	mg/L	5.0	4.9	1.0	30%	Pass
Sodium	M16-Oc00978	CP	mg/L	71	71	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Oc00979	CP	mg/L	130	110	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Oc00980	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Oc00980	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Oc00980	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Oc00980	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-Oc00980	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-Oc00980	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Oc00980	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc00982	CP	uS/cm	2000	2000	<1	30%	Pass
pH	M16-Oc00982	CP	pH Units	7.5	7.5	pass	30%	Pass
Phosphate total (as P)	M16-Oc00982	CP	mg/L	0.27	0.25	9.0	30%	Pass
Total Dissolved Solids	M16-Oc00982	CP	mg/L	1200	1200	1.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc00982	CP	mg/L	63	64	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc00982	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc00982	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc00982	CP	mg/L	63	64	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Oc00983	CP	mg/L	130	130	2.1	30%	Pass
Phosphorus reactive (as P)	M16-Oc00983	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 5, 2016 8:15 AM**
Eurofins | mgt reference: **518240**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **518240-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Oct 05, 2016

Client Sample ID			MW2 Water	MW4 Water	SWL1_1 Water	SWL1_2 Water
Sample Matrix			M16-Oc01871	M16-Oc01872	M16-Oc01873	M16-Oc01874
Eurofins mgt Sample No.			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	45	< 10	16	160
Chloride	1	mg/L	52	14	53	62
Conductivity (at 25°C)	1	uS/cm	430	250	310	360
pH	0.1	pH Units	7.3	6.6	6.8	6.8
Phosphate total (as P)	0.05	mg/L	0.08	0.06	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.5	< 5	7.7	9.6
Total Dissolved Solids	10	mg/L	280	170	190	190
Turbidity	1	NTU	-	-	2.4	2.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	160	85	58	46
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	160	85	58	46
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.02	< 0.01	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.87	4.5	0.10	0.22
Nitrate (as N)	0.02	mg/L	0.87	4.5	0.10	0.19
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	0.5	< 0.2	0.34	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	< 0.2	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	1.4	4.5	0.4	0.7
Heavy Metals						
Aluminium	0.05	mg/L	4.1	0.13	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.08	0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	0.54	< 0.05	0.19	0.15
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.08	< 0.05

Client Sample ID			MW2 Water	MW4 Water	SWL1_1 Water	SWL1_2 Water
Sample Matrix			M16-Oc01871	M16-Oc01872	M16-Oc01873	M16-Oc01874
Eurofins mgt Sample No.			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.021
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	0.033	0.028	0.024
Zinc (filtered)	0.005	mg/L	< 0.005	0.029	0.027	0.021
Alkali Metals						
Calcium	0.5	mg/L	63	38	13	15
Magnesium	0.5	mg/L	2.3	2.7	6.4	8.0
Potassium	0.5	mg/L	1.3	< 0.5	3.3	4.1
Sodium	0.5	mg/L	22	7.5	37	37
Pathogens						
E.coli	1	MPN/100mL	-	-	2	10
Thermotolerant Coliforms	1	MPN/100mL	-	-	2	30

Client Sample ID			SWL1_3 Water	SWL2_1 Water	SWL2_2 Water	SWL2_3 Water
Sample Matrix			M16-Oc01875	M16-Oc01876	M16-Oc01877	M16-Oc01878
Eurofins mgt Sample No.			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	63	58	56	55
Conductivity (at 25°C)	1	uS/cm	360	360	360	360
pH	0.1	pH Units	6.9	7.6	7.6	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	9.6	10	10	11
Total Dissolved Solids	10	mg/L	190	190	190	200
Turbidity	1	NTU	4.1	2.6	2.2	6.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	53	71	79	65
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	53	71	79	65
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.04	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	0.25	0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.23	0.05	0.05	0.05
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.5	0.5
Total Nitrogen (as N)	0.2	mg/L	0.7	0.5	0.5	0.5

Client Sample ID			SWL1_3	SWL2_1	SWL2_2	SWL2_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc01875	M16-Oc01876	M16-Oc01877	M16-Oc01878
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.06	0.15	0.15	0.18
Aluminium (filtered)	0.05	mg/L	< 0.05	0.14	0.14	0.14
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.18	0.08	0.08	0.09
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.011	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.019	0.007	0.006	0.007
Zinc (filtered)	0.005	mg/L	0.017	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	14	15	15	16
Magnesium	0.5	mg/L	8.0	9.2	9.3	9.7
Potassium	0.5	mg/L	4.0	3.3	3.2	3.2
Sodium	0.5	mg/L	38	38	37	39
Pathogens						
E.coli	1	MPN/100mL	20	6	6	10
Thermotolerant Coliforms	1	MPN/100mL	140	28	10	41

Client Sample ID			QC209	QC211	QC212
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Oc01879	M16-Oc01880	M16-Oc01881
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO3)	10	mg/L	< 10	-	-
Chloride	1	mg/L	64	-	-
Conductivity (at 25°C)	1	uS/cm	360	-	-
pH	0.1	pH Units	6.9	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	9.8	-	-
Total Dissolved Solids	10	mg/L	190	-	-
Turbidity	1	NTU	3.4	-	-

Client Sample ID			QC209	QC211	QC212
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Oc01879	M16-Oc01880	M16-Oc01881
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit			
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	43	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	43	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.03	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.26	-	-
Nitrate (as N)	0.02	mg/L	0.26	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.5	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	-	-
Total Nitrogen (as N)	0.2	mg/L	0.8	-	-
Heavy Metals					
Aluminium	0.05	mg/L	0.05	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.16	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.011	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.019	-	-
Zinc (filtered)	0.005	mg/L	0.017	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	14	-	-
Magnesium	0.5	mg/L	8.1	-	-
Potassium	0.5	mg/L	3.5	-	-
Sodium	0.5	mg/L	38	-	-
Pathogens					
E.coli	1	MPN/100mL	31	-	-
Thermotolerant Coliforms	1	MPN/100mL	150	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 05, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 05, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 05, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 05, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 05, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 05, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 05, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 05, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 05, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 05, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 05, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 05, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 05, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 05, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 05, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 05, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 10, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 10, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 10, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Oct 05, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 05, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 05, 2016	24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	100		70-130	Pass	
Chloride	%	102		70-130	Pass	
Phosphate total (as P)	%	105		70-130	Pass	
Phosphorus reactive (as P)	%	111		70-130	Pass	
Sulphate (as S)	%	108		70-130	Pass	
Total Dissolved Solids	%	93		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	111		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	113		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	%	91		70-130	Pass	
Nitrate (as N)	%	91		70-130	Pass	
Nitrite (as N)	%	98		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	109		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	94		70-130	Pass	
Aluminium (filtered)	%	87		70-130	Pass	
Arsenic	%	106		70-130	Pass	
Arsenic (filtered)	%	90		70-130	Pass	
Cadmium	%	112		70-130	Pass	
Cadmium (filtered)	%	93		70-130	Pass	
Chromium	%	107		70-130	Pass	
Chromium (filtered)	%	96		70-130	Pass	
Copper	%	104		70-130	Pass	
Copper (filtered)	%	96		70-130	Pass	
Iron	%	91		70-130	Pass	
Iron (filtered)	%	88		70-130	Pass	
Lead	%	106		70-130	Pass	
Lead (filtered)	%	97		70-130	Pass	
Manganese	%	96		70-130	Pass	
Manganese (filtered)	%	88		70-130	Pass	
Mercury	%	108		70-130	Pass	
Mercury (filtered)	%	96		70-130	Pass	
Nickel	%	94		70-130	Pass	
Nickel (filtered)	%	87		70-130	Pass	
Selenium	%	123		70-130	Pass	
Selenium (filtered)	%	100		70-130	Pass	
Zinc	%	99		70-130	Pass	
Zinc (filtered)	%	86		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	109		70-130	Pass	
Magnesium	%	116		70-130	Pass	
Potassium	%	106		70-130	Pass	
Sodium	%	104		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Oc01871	CP	%	92		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc01931	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Oc01871	CP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc01871	CP	%	87		70-130	Pass	
Nitrate (as N)	M16-Oc01871	CP	%	87		70-130	Pass	
Nitrite (as N)	M16-Oc01871	CP	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Oc01931	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-Oc01871	CP	%	91		70-130	Pass	
Magnesium	M16-Oc01871	CP	%	101		70-130	Pass	
Potassium	M16-Oc01871	CP	%	93		70-130	Pass	
Sodium	M16-Oc01871	CP	%	95		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc01872	CP	%	76		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc01872	CP	%	126		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Oc01872	CP	%	103		70-130	Pass	
Aluminium (filtered)	M16-Oc01872	CP	%	96		70-130	Pass	
Arsenic	M16-Oc01872	CP	%	104		70-130	Pass	
Arsenic (filtered)	M16-Oc01872	CP	%	109		70-130	Pass	
Cadmium	M16-Oc01872	CP	%	112		70-130	Pass	
Cadmium (filtered)	M16-Oc01872	CP	%	108		70-130	Pass	
Chromium	M16-Oc01872	CP	%	103		70-130	Pass	
Chromium (filtered)	M16-Oc01872	CP	%	104		70-130	Pass	
Copper	M16-Oc01872	CP	%	100		70-130	Pass	
Copper (filtered)	M16-Oc01872	CP	%	101		70-130	Pass	
Iron	M16-Oc01872	CP	%	87		70-130	Pass	
Lead	M16-Oc01872	CP	%	101		70-130	Pass	
Lead (filtered)	M16-Oc01872	CP	%	99		70-130	Pass	
Manganese	M16-Oc01872	CP	%	93		70-130	Pass	
Manganese (filtered)	M16-Oc01872	CP	%	94		70-130	Pass	
Mercury	M16-Oc01872	CP	%	103		70-130	Pass	
Mercury (filtered)	M16-Oc01872	CP	%	90		70-130	Pass	
Nickel	M16-Oc01872	CP	%	90		70-130	Pass	
Nickel (filtered)	M16-Oc01872	CP	%	91		70-130	Pass	
Selenium	M16-Oc01872	CP	%	122		70-130	Pass	
Selenium (filtered)	M16-Oc01872	CP	%	112		70-130	Pass	
Zinc	M16-Oc01872	CP	%	93		70-130	Pass	
Zinc (filtered)	M16-Oc01872	CP	%	101		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Oc01879	CP	%	70		70-130	Pass	
Phosphate total (as P)	M16-Oc01879	CP	%	106		70-130	Pass	
Sulphate (as S)	M16-Oc01879	CP	%	102		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P16-Se28946	NCP	mg/L	45	47	4.0	30%	Pass	
Conductivity (at 25°C)	M16-Oc01871	CP	uS/cm	430	440	1.0	30%	Pass	
pH	M16-Oc01871	CP	pH Units	7.3	7.2	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Oc01871	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M16-Oc00514	NCP	mg/L	270	270	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc01871	CP	mg/L	160	180	14	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc01871	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc01871	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc01871	CP	mg/L	160	180	14	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-Oc01871	CP	mg/L	0.01	0.01	14	30%	Pass	
Nitrate & Nitrite (as N)	M16-Oc01871	CP	mg/L	0.87	0.87	<1	30%	Pass	
Nitrate (as N)	M16-Oc01871	CP	mg/L	0.87	0.87	<1	30%	Pass	
Nitrite (as N)	M16-Oc01871	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium	M16-Oc01871	CP	mg/L	4.1	4.0	1.0	30%	Pass	
Aluminium (filtered)	M16-Oc01871	CP	mg/L	0.08	0.08	3.0	30%	Pass	
Arsenic	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Oc01871	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	M16-Oc01871	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Oc01871	CP	mg/L	0.004	0.004	1.0	30%	Pass	
Chromium (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-Oc01871	CP	mg/L	0.003	0.002	2.0	30%	Pass	
Copper (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-Oc01871	CP	mg/L	0.54	0.54	1.0	30%	Pass	
Iron (filtered)	M16-Oc01871	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-Oc01871	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Lead (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Oc01871	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-Oc01871	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Oc01871	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-Oc01871	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc01871	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Nickel (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Oc01871	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Oc01871	CP	mg/L	0.013	0.012	9.0	30%	Pass	
Zinc (filtered)	M16-Oc01871	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	M16-Oc01871	CP	mg/L	63	62	1.0	30%	Pass	
Magnesium	M16-Oc01871	CP	mg/L	2.3	2.2	1.0	30%	Pass	
Potassium	M16-Oc01871	CP	mg/L	1.3	1.1	19	30%	Pass	
Sodium	M16-Oc01871	CP	mg/L	22	22	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-Oc01873	CP	NTU	2.4	2.3	4.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-Oc01878	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Oc01878	CP	mg/L	0.5	0.5	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Oc01879	CP	mg/L	64	62	2.8	30%	Pass
Conductivity (at 25°C)	M16-Oc01879	CP	uS/cm	360	360	1.0	30%	Pass
pH	M16-Oc01879	CP	pH Units	6.9	6.9	pass	30%	Pass
Sulphate (as S)	M16-Oc01879	CP	mg/L	9.8	9.6	2.2	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc01879	CP	mg/L	43	49	14	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc01879	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc01879	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc01879	CP	mg/L	43	49	14	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1609263**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 03-Oct-2016 17:00
Date Analysis Commenced : 03-Oct-2016
Issue Date : 10-Oct-2016 18:50



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Ultra-trace metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- EA015H (Total Dissolved Solids): It is recognized TDS biasing high for sample 'QC206' due to possible matrix interferences.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC202	QC204	QC205	QC206	QC208
Client sampling date / time					[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]
Compound	CAS Number	LOR	Unit	EP1609263-001	EP1609263-002	EP1609263-003	EP1609263-004	EP1609263-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.29	7.29	7.61	7.99	6.76	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	9460	1970	1740	1900	585	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	5720	1250	1100	1520	362	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	8.3	----	----	2.8	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	410	72	225	221	12	
Total Alkalinity as CaCO3	----	1	mg/L	410	72	225	221	12	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	34	5	8	4	4	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	375	66	14	25	74	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	3300	651	511	556	152	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	215	27	68	47	21	
Magnesium	7439-95-4	1	mg/L	256	48	40	36	14	
Sodium	7440-23-5	1	mg/L	1520	296	230	297	77	
Potassium	7440-09-7	1	mg/L	11	10	6	4	6	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	11	168	10	10	134	
Arsenic	7440-38-2	0.2	µg/L	0.6	1.2	0.2	0.7	0.3	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
Chromium	7440-47-3	0.2	µg/L	1.0	0.8	0.2	0.3	0.7	
Copper	7440-50-8	0.5	µg/L	<0.5	0.7	<0.5	<0.5	0.8	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC202	QC204	QC205	QC206	QC208
Client sampling date / time					[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]
Compound	CAS Number	LOR	Unit	EP1609263-001	EP1609263-002	EP1609263-003	EP1609263-004	EP1609263-005	
				Result	Result	Result	Result	Result	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	134	1460	7	99	242	
Lead	7439-92-1	0.1	µg/L	<0.1	0.2	<0.1	<0.1	0.1	
Manganese	7439-96-5	0.5	µg/L	37.7	20.9	3.2	12.8	9.2	
Nickel	7440-02-0	0.5	µg/L	0.6	2.7	<0.5	<0.5	0.6	
Selenium	7782-49-2	0.2	µg/L	0.4	0.4	<0.2	<0.2	<0.2	
Zinc	7440-66-6	1	µg/L	10	4	<1	<1	11	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	4030	289	3840	23100	170	
Arsenic	7440-38-2	0.2	µg/L	3.0	1.2	8.1	19.8	0.3	
Cadmium	7440-43-9	0.05	µg/L	0.05	<0.05	<0.05	0.08	<0.05	
Chromium	7440-47-3	0.2	µg/L	10.0	1.1	5.9	43.4	0.8	
Copper	7440-50-8	0.5	µg/L	6.4	0.8	0.9	6.1	0.9	
Iron	7439-89-6	2	µg/L	7030	1940	8420	12700	335	
Lead	7439-92-1	0.1	µg/L	5.3	0.3	4.5	24.5	0.1	
Manganese	7439-96-5	0.5	µg/L	55.1	22.0	4.3	25.8	10.3	
Selenium	7782-49-2	0.2	µg/L	3.0	0.4	1.3	5.4	<0.2	
Nickel	7440-02-0	0.5	µg/L	6.5	2.8	7.3	27.3	0.6	
Zinc	7440-66-6	1	µg/L	314	4	4	58	9	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.53	<0.01	0.31	0.36	0.04	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.01	<0.01	<0.01	0.02	0.02	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.03	<0.01	0.01	0.23	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.03	<0.01	0.03	0.25	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.4	1.9	0.7	0.7	0.5	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	2.4	1.9	0.7	0.7	0.8	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.35	0.36	0.15	0.23	0.04	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.21	0.08	0.15	<0.01	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC202	QC204	QC205	QC206	QC208
Client sampling date / time					[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]	[03-Oct-2016]
Compound	CAS Number	LOR	Unit	EP1609263-001	EP1609263-002	EP1609263-003	EP1609263-004	EP1609263-005	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	109	21.2	19.2	20.6	6.07	
Total Cations	----	0.01	meq/L	98.2	18.4	16.8	18.3	5.70	
Ionic Balance	----	0.01	%	5.26	6.95	6.55	5.90	3.10	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	360	----	----	210	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	360	----	----	210	

QUALITY CONTROL REPORT

Work Order	: EP1609263	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 03-Oct-2016
Order number	: ----	Date Analysis Commenced	: 03-Oct-2016
C-O-C number	: ----	Issue Date	: 10-Oct-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 608290)									
EP1609263-001	QC202	EA005-P: pH Value	----	0.01	pH Unit	7.29	7.24	0.688	0% - 20%
EP1609283-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.04	8.05	0.124	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 608291)									
EP1609263-001	QC202	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	9460	9430	0.308	0% - 20%
EP1609283-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3200	3400	6.17	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 610682)									
EP1609231-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	61200	68300	11.0	0% - 20%
EP1609247-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	83	74	11.5	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 610683)									
EP1609263-005	QC208	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	362	362	0.276	0% - 20%
EA045: Turbidity (QC Lot: 606774)									
EP1609247-001	Anonymous	EA045: Turbidity	----	0.1	NTU	<0.1	<0.1	0.00	No Limit
EP1609269-001	Anonymous	EA045: Turbidity	----	0.1	NTU	16.7	16.6	0.599	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 608289)									
EP1609263-001	QC202	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	410	413	0.845	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	410	413	0.845	0% - 20%
EP1609283-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	523	475	9.62	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	523	475	9.62	0% - 20%
ED038A: Acidity (QC Lot: 610665)									
EP1609062-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	4	4	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED038A: Acidity (QC Lot: 610665) - continued									
EP1609263-001	QC202	ED038: Acidity as CaCO3	----	1	mg/L	34	38	9.28	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 603995)									
EP1609263-001	QC202	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	375	374	0.00	0% - 20%
EP1609263-003	QC205	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	14	13	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 603996)									
EP1609263-001	QC202	ED045G: Chloride	16887-00-6	1	mg/L	3300	2710	19.6	0% - 20%
EP1609263-003	QC205	ED045G: Chloride	16887-00-6	1	mg/L	511	520	1.69	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 605873)									
EP1609228-029	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	760	782	2.93	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6410	6460	0.823	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	101000	103000	1.86	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2400	2360	1.47	0% - 20%
EP1609247-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1	1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	1	1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	33	33	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 610159)									
EP1609263-002	QC204	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 607448)									
EM1611598-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1622264-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 607184)									
EM1611598-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.54	0.53	0.00	0% - 50%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	1.3	1.2	0.00	0% - 50%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	3.0	3.0	0.00	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	3.8	3.9	0.00	0% - 50%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.9	0.8	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1780	1770	0.118	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	715	719	0.627	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	1240	1250	0.697	0% - 20%
		EG094A-F: Aluminium	7429-90-5	5	µg/L	87000	88100	1.17	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 607185)									
EM1611598-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	2.2	2.2	0.00	0% - 50%
		EG094B-F: Iron	7439-89-6	2	µg/L	776	777	0.224	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 607195)									
EM1611598-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.54	0.54	0.00	0% - 50%
		EG094A-T: Lead	7439-92-1	0.1	µg/L	1.3	1.2	0.00	0% - 50%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	3.2	3.2	0.00	0% - 50%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	4.2	4.2	0.00	0% - 20%

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 Work Order : EP1609263
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA_NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 607195) - continued									
EM1611598-001	Anonymous	EG094A-T: Copper	7440-50-8	0.5	µg/L	1.0	1.6	49.8	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	1870	1860	0.738	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	747	746	0.00	0% - 20%
		EG094A-T: Zinc	7440-66-6	1	µg/L	1270	1260	1.07	0% - 20%
		EG094A-T: Aluminium	7429-90-5	5	µg/L	92500	91500	1.11	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 607196)									
EM1611598-001	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	2.4	2.4	0.00	0% - 50%
		EG094B-T: Iron	7439-89-6	2	µg/L	874	864	1.14	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 603998)									
EP1609263-001	QC202	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.53	0.52	2.04	0% - 20%
EP1609263-003	QC205	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.31	0.29	4.29	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 603993)									
EP1609263-001	QC202	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	0.01	0.00	No Limit
EP1609263-003	QC205	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 603999)									
EP1609263-001	QC202	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.00	No Limit
EP1609263-003	QC205	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 607804)									
EP1609263-001	QC202	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.4	2.4	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 607803)									
EP1609263-001	QC202	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.35	0.36	3.38	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 603994)									
EP1609263-001	QC202	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.06	0.00	No Limit
EP1609263-003	QC205	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.08	0.07	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 608290)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 608291)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	95.9	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 610682)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.2	83	111	
				<10	293 mg/L	107	70	130	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 610683)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	96.9	83	111	
				<10	293 mg/L	110	70	130	
EA045: Turbidity (QCLot: 606774)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.4	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 608289)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	100	90	106	
ED038A: Acidity (QCLot: 610665)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	102	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 603995)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	89.7	89	113	
				<1	100 mg/L	102	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 603996)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	116	84	120	
				<1	1000 mg/L	104	84	110	
ED093F: Dissolved Major Cations (QCLot: 605873)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	99.4	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	99.3	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.5	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.2	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 610159)									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG035F: Dissolved Mercury by FIMS (QCLot: 610159) - continued									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	98.7	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 607448)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.4	77	111	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 607184)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	117	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	118	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	104	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	113	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	110	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	112	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	116	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	108	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	120	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 607185)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	102	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	107	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 607195)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	111	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	91.3	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	86.7	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	105	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	99.1	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	114	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	105	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	103	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	86.9	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 607196)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	108	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	81.0	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 603998)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 603993)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	98.9	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 603999)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 607804)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.4	82	110	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 607803)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.1	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 603994)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 603995)							
EP1609263-002	QC204	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	112	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 603996)							
EP1609263-002	QC204	ED045G: Chloride	16887-00-6	1000 mg/L	89.5	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 610159)							
EP1609263-003	QC205	EG035F: Mercury	7439-97-6	0.01 mg/L	90.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 607448)							
ES1622258-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	84.7	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 607184)							
EP1609263-001	QC202	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	95.5	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	92.9	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	103	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	94.2	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	74.7	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	95.6	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 607195)							
EP1609263-001	QC202	EG094A-T: Arsenic	7440-38-2	50 µg/L	115	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	102	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	103	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	98.7	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	97.1	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	104	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 607195) - continued							
EP1609263-001	QC202	EG094A-T: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 603998)							
EP1609263-002	QC204	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.6	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 603993)							
EP1609263-002	QC204	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	82.3	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 603999)							
EP1609263-002	QC204	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	90.9	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 607804)							
EP1609263-001	QC202	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	96.3	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 607803)							
EP1609263-001	QC202	EK067G: Total Phosphorus as P	----	1 mg/L	113	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 603994)							
EP1609263-002	QC204	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	104	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1609263	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 03-Oct-2016
Site	: ----	Issue Date	: 10-Oct-2016
Sampler	: ----	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	10-Oct-2016	10-Oct-2016	✓
EA045: Turbidity								
Miscellaneous Plastic bottle -unpreserved (EA045) QC204,	QC208	03-Oct-2016	----	----	----	05-Oct-2016	05-Oct-2016	✓
ED037P: Alkalinity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	06-Oct-2016	17-Oct-2016	✓
ED038A: Acidity								
Miscellaneous Plastic bottle -unpreserved (ED038) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	10-Oct-2016	17-Oct-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	03-Oct-2016	31-Oct-2016	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	03-Oct-2016	31-Oct-2016	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	05-Oct-2016	10-Oct-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	10-Oct-2016	31-Oct-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035T: Total Recoverable Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	----	----	----	06-Oct-2016	31-Oct-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	----	----	----	06-Oct-2016	01-Apr-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	06-Oct-2016	01-Apr-2017	✓	06-Oct-2016	01-Apr-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	----	----	----	03-Oct-2016	31-Oct-2016	✓
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	----	----	----	03-Oct-2016	05-Oct-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	----	----	----	03-Oct-2016	31-Oct-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	07-Oct-2016	31-Oct-2016	✓	07-Oct-2016	31-Oct-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC202, QC205, QC208	QC204, QC206	03-Oct-2016	07-Oct-2016	31-Oct-2016	✓	07-Oct-2016	31-Oct-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G)								
QC202, QC205, QC208	QC204, QC206,	03-Oct-2016	----	----	----	03-Oct-2016	05-Oct-2016	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006)								
QC204,	QC208	03-Oct-2016	----	----	----	04-Oct-2016	04-Oct-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	27	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	4	27	14.81	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	27	7.41	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1609324**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 04-Oct-2016 16:30
Date Analysis Commenced : 04-Oct-2016
Issue Date : 11-Oct-2016 17:07



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- MF = membrane filtration
- CFU = colony forming unit
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC210	----	----	----	----
Client sampling date / time		[04-Oct-2016]		----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1609324-001	-----	-----	-----	-----
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.11	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	329	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	178	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	2.0	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	37	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	37	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	32	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	63	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	14	----	----	----	----
Magnesium	7439-95-4	1	mg/L	7	----	----	----	----
Sodium	7440-23-5	1	mg/L	42	----	----	----	----
Potassium	7440-09-7	1	mg/L	4	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.08	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.025	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.022	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.20	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.10	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC210	----	----	----	----
Client sampling date / time				[04-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1609324-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG020T: Total Metals by ICP-MS - Continued									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	0.001	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	0.001	----	----	----	----	
Manganese	7439-96-5	0.001	mg/L	0.027	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----	
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	0.025	----	----	----	----	
Iron	7439-89-6	0.05	mg/L	0.26	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.27	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.27	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.8	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.02	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC210	----	----	----	----
Client sampling date / time				[04-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1609324-001	-----	-----	-----	-----	
Result					----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	64	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	64	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1609324	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 04-Oct-2016
Order number	: ----	Date Analysis Commenced	: 04-Oct-2016
C-O-C number	: ----	Issue Date	: 11-Oct-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Efua Wilson	Metals Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 608296)									
EP1609318-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.58	6.57	0.152	0% - 20%
EP1609324-001	QC210	EA005-P: pH Value	----	0.01	pH Unit	7.11	7.06	0.706	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 608297)									
EP1609327-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	491	491	0.00	0% - 20%
EP1609324-001	QC210	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	329	319	3.07	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 612030)									
EP1609322-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	10200	10200	0.569	0% - 20%
EP1609327-006	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	208	215	3.31	0% - 20%
EA045: Turbidity (QC Lot: 606774)									
EP1609247-001	Anonymous	EA045: Turbidity	----	0.1	NTU	<0.1	<0.1	0.00	No Limit
EP1609269-001	Anonymous	EA045: Turbidity	----	0.1	NTU	32.1	32.0	0.312	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 608298)									
EP1609324-001	QC210	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	37	35	5.77	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	37	35	5.77	0% - 20%
EP1609348-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	9	9	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	9	9	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 605425)									
EP1609324-001	QC210	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	32	32	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 605428)									
EP1609324-001	QC210	ED045G: Chloride	16887-00-6	1	mg/L	63	64	0.00	0% - 20%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 611072)									
EP1609318-010	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	4	3	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	3	3	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	136	133	2.38	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	18	18	0.00	0% - 50%
EP1609315-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	50	49	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	68	67	1.63	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	304	298	1.79	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	23	23	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 611075)									
EP1609326-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.852	0.854	0.192	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.551	0.554	0.586	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.232	0.237	1.79	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EP1609327-006	Anonymous	EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.033	0.036	8.86	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.05	0.05	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.26	0.26	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 611133)									
EP1609315-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.039	0.039	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.344	0.340	1.14	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.064	0.064	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	1.08	1.09	1.22	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.088	0.079	10.6	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.066	0.068	2.64	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.050	0.057	13.2	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	130	130	0.447	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	0.12	0.13	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	56.0	56.9	1.63	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 611133) - continued									
EP1609346-014	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.017	0.017	0.00	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.019	0.021	10.1	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.22	0.20	6.91	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.41	0.42	2.65	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 611074)									
EP1609327-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1609315-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 611100)									
EP1609324-001	QC210	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP1609346-016	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 610692)									
EP1609331-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.06	0.06	0.00	No Limit
EP1609400-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 610707)									
EP1609329-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.20	0.21	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 605432)									
EP1609324-001	QC210	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.05	0.00	No Limit
EP1609331-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.07	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 605426)									
EP1609324-001	QC210	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 605433)									
EP1609324-001	QC210	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.27	0.27	0.00	0% - 20%
EP1609331-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.04	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 610914)									
EP1609324-001	QC210	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 610913)									
EP1609324-001	QC210	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.03	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 605427)									
EP1609324-001	QC210	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 608296)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 608297)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	95.9	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 612030)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.2	83	111	
				<10	293 mg/L	106	70	130	
EA045: Turbidity (QCLot: 606774)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.4	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 608298)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	107	76	126	
				<1	200 mg/L	101	90	106	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 605425)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	89	113	
				<1	100 mg/L	82.6	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 605428)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	120	84	120	
				<1	1000 mg/L	101	84	110	
ED093F: Dissolved Major Cations (QCLot: 611072)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.3	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	96.4	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.0	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.1	90	110	
EG020F: Dissolved Metals by ICP-MS (QCLot: 611075)									
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	96.9	84	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.3	84	108	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.1	85	109	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	93.8	84	110	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.5	85	107	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.2	85	109	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG020F: Dissolved Metals by ICP-MS (QCLot: 611075) - continued									
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.9	84	112	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	88	112	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.0	89	115	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	100	84	112	
EG020T: Total Metals by ICP-MS (QCLot: 611133)									
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	92.1	86	116	
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.6	83	107	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	91.7	84	110	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.4	85	111	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.6	85	109	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	99.9	83	109	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.4	82	110	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.7	80	110	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	97.7	81	103	
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	96.5	82	112	
EG035F: Dissolved Mercury by FIMS (QCLot: 611074)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	92.3	92	116	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 611100)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	93.0	87	115	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 610692)									
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	95.0	87	111	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 610707)									
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.8	85	113	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 605432)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	111	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 605426)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.6	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 605433)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 610914)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.9	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 610913)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	99.5	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 605427)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	107	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 605425)							
EP1609324-001	QC210	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	73.3	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 605428)							
EP1609324-001	QC210	ED045G: Chloride	16887-00-6	1000 mg/L	108	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 611075)							
EP1609326-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	121	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	120	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	114	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	117	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	126	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	120	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	120	70	130
EG020T: Total Metals by ICP-MS (QCLot: 611133)							
EP1609317-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	99.4	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	95.2	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	98.5	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	99.7	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	103	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	93.1	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	104	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 611074)							
EP1609324-001	QC210	EG035F: Mercury	7439-97-6	0.01 mg/L	88.6	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 611100)							
EP1609326-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	95.9	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 610692)							
EP1609324-001	QC210	EG094A-F: Cadmium	7440-43-9	12.5 µg/L	96.8	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 610707)							
EP1609324-001	QC210	EG094A-T: Cadmium	7440-43-9	12.5 µg/L	102	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 605432)							
EP1609324-001	QC210	EK055G: Ammonia as N	7664-41-7	1 mg/L	111	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 605426)							
EP1609324-001	QC210	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	83.1	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 605433)							

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 Work Order : EP1609324
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 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 605433) - continued							
EP1609324-001	QC210	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	111	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 610914)							
EP1609324-001	QC210	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	102	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 610913)							
EP1609324-001	QC210	EK067G: Total Phosphorus as P	----	1 mg/L	113	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 605427)							
EP1609324-001	QC210	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	110	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1609324	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 04-Oct-2016
Site	: ----	Issue Date	: 11-Oct-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural QC210	----	----	----	06-Oct-2016	04-Oct-2016	2

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) QC210	04-Oct-2016	----	----	----	06-Oct-2016	04-Oct-2016	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) QC210	04-Oct-2016	----	----	----	06-Oct-2016	01-Nov-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) QC210	04-Oct-2016	----	----	----	11-Oct-2016	11-Oct-2016	✔
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045) QC210	04-Oct-2016	----	----	----	05-Oct-2016	06-Oct-2016	✔
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) QC210	04-Oct-2016	----	----	----	06-Oct-2016	18-Oct-2016	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	01-Nov-2016	✔
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	01-Nov-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) QC210	04-Oct-2016	----	----	----	11-Oct-2016	01-Nov-2016	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) QC210	04-Oct-2016	----	----	----	11-Oct-2016	02-Apr-2017	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) QC210	04-Oct-2016	10-Oct-2016	02-Apr-2017	✓	10-Oct-2016	02-Apr-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC210	04-Oct-2016	----	----	----	11-Oct-2016	01-Nov-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) QC210	04-Oct-2016	----	----	----	11-Oct-2016	01-Nov-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) QC210	04-Oct-2016	----	----	----	10-Oct-2016	02-Apr-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC210	04-Oct-2016	10-Oct-2016	02-Apr-2017	✓	10-Oct-2016	02-Apr-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	01-Nov-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	06-Oct-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	01-Nov-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC210	04-Oct-2016	11-Oct-2016	01-Nov-2016	✓	11-Oct-2016	01-Nov-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC210	04-Oct-2016	11-Oct-2016	01-Nov-2016	✓	11-Oct-2016	01-Nov-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G) QC210	04-Oct-2016	----	----	----	04-Oct-2016	06-Oct-2016	✓

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 Work Order : EP1609324
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 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method <i>Container / Client Sample ID(s)</i>	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC210	04-Oct-2016	----	----	----	04-Oct-2016	05-Oct-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 25, 2016 11:01 AM**
Eurofins | mgt reference: **520951**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **520951-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Oct 25, 2016**

Client Sample ID			MW48	MW49	MW50	MW52
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc22898	M16-Oc22899	M16-Oc22900	M16-Oc22901
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	48	29	74	69
Chloride	1	mg/L	800	1200	2600	9400
Conductivity (at 25°C)	1	uS/cm	3000	3900	8600	26000
pH	0.1	pH Units	4.8	7.5	5.8	6.4
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	0.21	0.49
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.46
Sulphate (as S)	5	mg/L	42	70	60	310
Total Dissolved Solids	10	mg/L	1700	2700	4700	17000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	140	36	120
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	140	36	120
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.03	0.20	0.42
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.93	25
Nitrate (as N)	0.02	mg/L	< 0.02	0.04	0.92	25
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.23
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.4	3.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.6	3.4
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	2.5	28
Heavy Metals						
Aluminium	0.05	mg/L	2.3	3.8	4.0	0.53
Aluminium (filtered)	0.05	mg/L	0.26	0.09	< 0.05	0.41
Arsenic	0.001	mg/L	0.002	< 0.001	0.003	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	0.00028	0.00006	0.00015	0.0011
Cadmium (filtered)	0.00005	mg/L	0.00028	0.00006	0.00011	0.0011
Chromium	0.001	mg/L	0.023	0.004	0.014	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.002	< 0.001	0.007	0.023
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.027
Iron	0.05	mg/L	5.5	0.93	3.0	2.6
Iron (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	2.1
Lead	0.001	mg/L	0.014	0.002	0.040	< 0.001

Client Sample ID			MW48 Water	MW49 Water	MW50 Water	MW52 Water
Sample Matrix			M16-Oc22898	M16-Oc22899	M16-Oc22900	M16-Oc22901
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	0.005	0.009	0.003	< 0.001
Manganese	0.005	mg/L	0.023	0.011	0.018	0.16
Manganese (filtered)	0.005	mg/L	0.024	0.010	0.018	0.17
Mercury	0.0001	mg/L	< 0.0001	0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.013	0.004	0.003	0.013
Nickel (filtered)	0.001	mg/L	0.012	0.003	0.002	0.014
Selenium	0.001	mg/L	< 0.001	0.001	0.002	0.013
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.011
Zinc	0.005	mg/L	0.15	0.014	0.008	0.80
Zinc (filtered)	0.005	mg/L	0.13	0.014	0.006	0.78
Alkali Metals						
Calcium	0.5	mg/L	13	23	31	140
Magnesium	0.5	mg/L	64	130	190	650
Potassium	0.5	mg/L	11	9.5	40	110
Sodium	0.5	mg/L	450	640	1700	4700

Client Sample ID			MW53 Water	MW54 Water	SWL19_1 Water	SWL19_2 Water
Sample Matrix			M16-Oc22902	M16-Oc22903	M16-Oc22904	M16-Oc22905
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	46	13	12	13
Chloride	1	mg/L	2200	440	1200	1200
Conductivity (at 25°C)	1	uS/cm	6600	1600	4100	4200
pH	0.1	pH Units	4.7	7.3	6.4	6.3
Phosphate total (as P)	0.05	mg/L	0.17	0.39	< 0.05	0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.09	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	78	17	40	39
Total Dissolved Solids	10	mg/L	3600	1000	2300	2300
Turbidity	1	NTU	-	-	< 1	12
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	150	22	22
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	150	22	22
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.07	< 0.01	< 0.01	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.2	0.4	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.2	0.4	0.5
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.2	0.4	0.5

Client Sample ID			MW53 Water	MW54 Water	SWL19_1 Water	SWL19_2 Water
Sample Matrix			M16-Oc22902	M16-Oc22903	M16-Oc22904	M16-Oc22905
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.29	0.11	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.09	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00023	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00023	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.64	0.90	0.06	0.09
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.014	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.014	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.048	0.020	0.007	< 0.005
Manganese (filtered)	0.005	mg/L	0.046	0.018	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	< 0.001	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.004	< 0.001	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.12	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.12	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	42	89	16	16
Magnesium	0.5	mg/L	180	31	83	84
Potassium	0.5	mg/L	18	5.8	9.2	9.3
Sodium	0.5	mg/L	1100	180	650	640
Pathogens						
E.coli	1	MPN/100mL	-	-	M15<10	M15<10
Thermotolerant Coliforms	1	MPN/100mL	-	-	10	10

Client Sample ID			SWL19_3 Water	SWL21_1 Water	SWL21_2 Water	SWL21_3 Water
Sample Matrix			M16-Oc22906	M16-Oc22907	M16-Oc22908	M16-Oc22909
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	13	< 10	< 10	< 10
Chloride	1	mg/L	1900	560	510	530
Conductivity (at 25°C)	1	uS/cm	5400	1700	1600	1700
pH	0.1	pH Units	6.4	7.1	7.1	7.0
Phosphate total (as P)	0.05	mg/L	0.20	0.45	0.47	2.2
Phosphorus reactive (as P)	0.05	mg/L	0.11	0.34	0.36	0.33
Sulphate (as S)	5	mg/L	< 5	10	10	10
Total Dissolved Solids	10	mg/L	3100	1100	1100	1100
Turbidity	1	NTU	27	29	17	41

Client Sample ID			SWL19_3	SWL21_1	SWL21_2	SWL21_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc22906	M16-Oc22907	M16-Oc22908	M16-Oc22909
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	25	62	62	61
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	25	62	62	61
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.06	0.05	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.06	0.06	0.07
Nitrate (as N)	0.02	mg/L	< 0.02	0.04	0.04	0.05
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	3.7	1.2	1.6	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.7	1.3	1.7	1.3
Total Nitrogen (as N)	0.2	mg/L	3.7	1.4	1.8	1.4
Heavy Metals						
Aluminium	0.05	mg/L	0.16	0.13	0.13	0.37
Aluminium (filtered)	0.05	mg/L	0.10	0.09	0.08	0.07
Arsenic	0.001	mg/L	0.002	0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	6.3	2.3	2.1	4.6
Iron (filtered)	0.05	mg/L	2.7	1.3	1.3	1.5
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.14	0.011	0.014	0.008
Manganese (filtered)	0.005	mg/L	0.13	0.007	0.008	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.005	0.002	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.006	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	27	23	22	22
Magnesium	0.5	mg/L	120	45	45	44
Potassium	0.5	mg/L	16	8.2	8.2	8.0
Sodium	0.5	mg/L	940	260	260	260
Pathogens						
E.coli	1	MPN/100mL	73	360	85	190
Thermotolerant Coliforms	1	MPN/100mL	97	670	300	380

Client Sample ID			QC214	QC216	QC217
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Oc22910	M16-Oc22911	M16-Oc22912
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	< 10	-	-
Chloride	1	mg/L	1300	-	-
Conductivity (at 25°C)	1	uS/cm	4100	-	-
pH	0.1	pH Units	7.3	-	-
Phosphate total (as P)	0.05	mg/L	0.09	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	40	-	-
Total Dissolved Solids	10	mg/L	2300	-	-
Turbidity	1	NTU	< 1	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	23	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	23	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	< 0.01	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	0.03	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.7	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	-	-
Total Nitrogen (as N)	0.2	mg/L	0.7	-	-
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	-	-
Manganese (filtered)	0.005	mg/L	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	-	-
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005

Client Sample ID			QC214	QC216	QC217
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Oc22910	M16-Oc22911	M16-Oc22912
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	16	-	-
Magnesium	0.5	mg/L	84	-	-
Potassium	0.5	mg/L	9.2	-	-
Sodium	0.5	mg/L	650	-	-
Pathogens					
E.coli	1	MPN/100mL	M15 <10	-	-
Thermotolerant Coliforms	1	MPN/100mL	10	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 25, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 25, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 25, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 25, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 25, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 25, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 25, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 25, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 26, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 25, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 26, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 26, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 26, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 26, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 26, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 26, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 01, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 02, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 01, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 01, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 25, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 25, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 520951 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Oct 25, 2016 11:01 AM Due: Nov 2, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X		X		X		X										X	X	X					X	X	X			X		X
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X		X
Brisbane Laboratory - NATA Site # 20794																																											
External Laboratory																																											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																						
1	MW48	Oct 24, 2016		Water	M16-Oc22898	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	MW49	Oct 24, 2016		Water	M16-Oc22899	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MW50	Oct 24, 2016		Water	M16-Oc22900	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW52	Oct 24, 2016		Water	M16-Oc22901	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW53	Oct 24, 2016		Water	M16-Oc22902	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW54	Oct 24, 2016		Water	M16-Oc22903	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	SWL19_1	Oct 24, 2016		Water	M16-Oc22904	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	SWL19_2	Oct 24, 2016		Water	M16-Oc22905	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	SWL19_3	Oct 24, 2016		Water	M16-Oc22906	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	SWL21_1	Oct 24, 2016		Water	M16-Oc22907	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 25, 2016 11:01 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 520951	Due: Nov 2, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X		X										X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						X	X		X	
Brisbane Laboratory - NATA Site # 20794																																											
External Laboratory																																											
11	SWL21_2	Oct 24, 2016		Water	M16-Oc22908	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL21_3	Oct 24, 2016		Water	M16-Oc22909	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	QC214	Oct 24, 2016		Water	M16-Oc22910	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	QC216	Oct 24, 2016		Water	M16-Oc22911			X	X	X	X		X		X		X		X		X		X	X	X	X	X					X							X				
15	QC217	Oct 24, 2016		Water	M16-Oc22912			X	X	X	X		X		X		X		X		X		X	X	X	X	X				X								X				
Test Counts					13	13	15	13	15	13	15	13	13	15	13	13	15	7	13	15	13	15	13	15	13	15	13	15	13	13	13	13	13	15	13	7	13	7	13	15	13	13	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	103		70-130	Pass	
Chloride	%	109		70-130	Pass	
Phosphate total (as P)	%	99		70-130	Pass	
Phosphorus reactive (as P)	%	111		70-130	Pass	
Sulphate (as S)	%	120		70-130	Pass	
Total Dissolved Solids	%	90		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	106		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	75		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	%	89		70-130	Pass	
Nitrate (as N)	%	89		70-130	Pass	
Nitrite (as N)	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	84		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	89		70-130	Pass	
Aluminium (filtered)	%	90		70-130	Pass	
Arsenic	%	93		70-130	Pass	
Arsenic (filtered)	%	90		70-130	Pass	
Cadmium	%	96		70-130	Pass	
Cadmium (filtered)	%	93		70-130	Pass	
Chromium	%	89		70-130	Pass	
Chromium (filtered)	%	90		70-130	Pass	
Copper	%	91		70-130	Pass	
Copper (filtered)	%	93		70-130	Pass	
Iron	%	85		70-130	Pass	
Iron (filtered)	%	95		70-130	Pass	
Lead	%	97		70-130	Pass	
Lead (filtered)	%	96		70-130	Pass	
Manganese	%	90		70-130	Pass	
Manganese (filtered)	%	92		70-130	Pass	
Mercury	%	93		70-130	Pass	
Mercury (filtered)	%	92		70-130	Pass	
Nickel	%	89		70-130	Pass	
Nickel (filtered)	%	92		70-130	Pass	
Selenium	%	86		70-130	Pass	
Selenium (filtered)	%	83		70-130	Pass	
Zinc	%	93		70-130	Pass	
Zinc (filtered)	%	96		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	111		70-130	Pass	
Magnesium	%	109		70-130	Pass	
Potassium	%	101		70-130	Pass	
Sodium	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	S16-Oc22100	NCP	%	98		70-130	Pass	
Sulphate (as S)	S16-Oc22100	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc22596	NCP	%	71		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc22596	NCP	%	86		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-Oc24234	NCP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc24234	NCP	%	88		70-130	Pass	
Nitrate (as N)	M16-Oc24234	NCP	%	88		70-130	Pass	
Nitrite (as N)	M16-Oc24234	NCP	%	96		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Oc24211	NCP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-Oc22898	CP	%	98		70-130	Pass	
Arsenic (filtered)	M16-Oc22898	CP	%	97		70-130	Pass	
Cadmium (filtered)	M16-Oc22898	CP	%	91		70-130	Pass	
Chromium (filtered)	M16-Oc22898	CP	%	93		70-130	Pass	
Copper (filtered)	M16-Oc22898	CP	%	89		70-130	Pass	
Iron (filtered)	M16-Oc22898	CP	%	80		70-130	Pass	
Lead (filtered)	M16-Oc22898	CP	%	89		70-130	Pass	
Manganese (filtered)	M16-Oc22898	CP	%	92		70-130	Pass	
Mercury (filtered)	M16-Oc22898	CP	%	88		70-130	Pass	
Nickel (filtered)	M16-Oc22898	CP	%	90		70-130	Pass	
Selenium (filtered)	M16-Oc22898	CP	%	90		70-130	Pass	
Zinc (filtered)	M16-Oc22898	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	S16-Oc25804	NCP	%	106		70-130	Pass	
Magnesium	S16-Oc25804	NCP	%	105		70-130	Pass	
Potassium	S16-Oc25804	NCP	%	99		70-130	Pass	
Sodium	S16-Oc25804	NCP	%	75		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Oc22899	CP	%	81		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Oc22899	CP	%	86		70-130	Pass	
Cadmium	M16-Oc22899	CP	%	83		70-130	Pass	
Chromium	M16-Oc22899	CP	%	89		70-130	Pass	
Copper	M16-Oc22899	CP	%	79		70-130	Pass	
Iron	M16-Oc22899	CP	%	75		70-130	Pass	
Lead	M16-Oc22899	CP	%	83		70-130	Pass	
Manganese	M16-Oc22899	CP	%	88		70-130	Pass	
Mercury	M16-Oc22899	CP	%	79		70-130	Pass	
Nickel	M16-Oc22899	CP	%	81		70-130	Pass	
Selenium	M16-Oc22899	CP	%	94		70-130	Pass	
Zinc	M16-Oc22899	CP	%	74		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Oc22904	CP	%	118		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Oc22910	CP	%	107			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)									
				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25344	NCP	%	122			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Oc22898	CP	mg/L	48	41	15	30%	Pass	
Conductivity (at 25°C)	M16-Oc22898	CP	uS/cm	3000	3000	1.0	30%	Pass	
pH	M16-Oc22898	CP	pH Units	4.8	4.8	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Oc22898	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc22898	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc22898	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc22898	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc22898	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-Oc24234	NCP	mg/L	0.02	0.02	15	30%	Pass	
Nitrate & Nitrite (as N)	M16-Oc24234	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Oc24234	NCP	mg/L	0.04	0.04	5.0	30%	Pass	
Nitrite (as N)	M16-Oc24234	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M16-Oc22898	CP	mg/L	2.3	3.0	30	30%	Pass	
Arsenic	M16-Oc22898	CP	mg/L	0.002	0.003	42	30%	Fail	Q15
Cadmium	M16-Oc22898	CP	mg/L	0.00028	0.00024	4.0	30%	Pass	
Copper	M16-Oc22898	CP	mg/L	0.002	0.003	18	30%	Pass	
Iron	M16-Oc19233	NCP	mg/L	43	43	1.0	30%	Pass	
Lead	M16-Oc22898	CP	mg/L	0.014	0.019	26	30%	Pass	
Manganese	M16-Oc22898	CP	mg/L	0.023	0.023	3.0	30%	Pass	
Mercury	M16-Oc22898	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc22898	CP	mg/L	0.013	0.014	3.0	30%	Pass	
Selenium	M16-Oc22898	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Oc22898	CP	mg/L	0.15	0.16	9.0	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M16-Oc22898	CP	mg/L	13	13	5.0	30%	Pass	
Magnesium	M16-Oc22898	CP	mg/L	64	67	5.0	30%	Pass	
Potassium	M16-Oc22898	CP	mg/L	11	11	6.0	30%	Pass	
Sodium	M16-Oc22898	CP	mg/L	450	470	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Oc22899	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Oc22899	CP	mg/L	0.09	0.10	1.0	30%	Pass	
Arsenic (filtered)	M16-Oc22899	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc22899	CP	mg/L	0.00006	0.00006	<1	30%	Pass	
Chromium (filtered)	M16-Oc22899	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc22899	CP	mg/L	0.001	0.001	1.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M16-Oc22899	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-Oc22899	CP	mg/L	0.009	0.008	3.0	30%	Pass
Manganese (filtered)	M16-Oc22899	CP	mg/L	0.010	0.010	1.0	30%	Pass
Mercury (filtered)	M16-Oc22899	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Oc22899	CP	mg/L	0.003	0.003	2.0	30%	Pass
Selenium (filtered)	M16-Oc22899	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Oc22899	CP	mg/L	0.014	0.015	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc22900	CP	uS/cm	8600	8900	1.0	30%	Pass
pH	M16-Oc22900	CP	pH Units	5.8	5.8	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc22900	CP	mg/L	36	35	5.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc22900	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc22900	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc22900	CP	mg/L	36	35	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Oc22903	CP	mg/L	440	440	<1	30%	Pass
Phosphate total (as P)	M16-Oc22903	CP	mg/L	0.39	0.39	1.0	30%	Pass
Sulphate (as S)	M16-Oc22903	CP	mg/L	17	17	4.3	30%	Pass
Total Dissolved Solids	M16-Oc22903	CP	mg/L	1000	1000	1.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-Oc22903	CP	mg/L	0.2	0.2	9.7	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-Oc22904	CP	NTU	< 1	< 1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc22908	CP	uS/cm	1600	2000	<1	30%	Pass
pH	M16-Oc22908	CP	pH Units	7.1	7.1	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc22908	CP	mg/L	62	62	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc22908	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc22908	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc22908	CP	mg/L	62	62	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Oc22908	CP	mg/L	0.08	0.08	5.0	30%	Pass
Arsenic (filtered)	M16-Oc22908	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-Oc22908	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-Oc22908	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-Oc22908	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Oc22908	CP	mg/L	1.3	1.4	8.0	30%	Pass
Lead (filtered)	M16-Oc22908	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Oc22908	CP	mg/L	0.008	0.009	2.0	30%	Pass
Mercury (filtered)	M16-Oc22908	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Oc22908	CP	mg/L	0.002	0.002	1.0	30%	Pass
Selenium (filtered)	M16-Oc22908	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-Oc22908	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Chloride	M16-Oc22909	CP	mg/L	530	530	<1	30%	Pass
Phosphorus reactive (as P)	M16-Oc22909	CP	mg/L	0.33	0.34	1.4	30%	Pass
Sulphate (as S)	M16-Oc22909	CP	mg/L	10	11	4.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc22910	CP	uS/cm	4100	3800	7.0	30%	Pass
pH	M16-Oc22910	CP	pH Units	7.3	7.3	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc22910	CP	mg/L	23	21	7.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc22910	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc22910	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc22910	CP	mg/L	23	21	7.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 26, 2016 8:17 AM**
Eurofins | mgt reference: **521097**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QC221 NOT RECEIVED | MET7 | filtered in MET10 | TOTAL4

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **521097-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Oct 26, 2016

Client Sample ID			MW45 Water	MW46 Water	MW47 Water	MW51 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Oc24202	M16-Oc24203	M16-Oc24204	M16-Oc24205
Date Sampled			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	19	< 10	32
Chloride	1	mg/L	460	1500	440	1400
Conductivity (at 25°C)	1	uS/cm	1700	5800	1600	4400
pH	0.1	pH Units	7.7	7.4	8.1	6.5
Phosphate total (as P)	0.05	mg/L	0.11	0.14	0.19	0.56
Phosphorus reactive (as P)	0.05	mg/L	0.05	0.06	0.12	0.44
Sulphate (as S)	5	mg/L	< 5	60	10	56
Total Dissolved Solids	10	mg/L	960	3300	860	2700
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	230	340	190	23
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	230	340	190	23
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.26	0.43	0.10	0.14
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.1	1.0	0.2	1.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.4	0.3	1.9
Total Nitrogen (as N)	0.2	mg/L	0.4	1.4	0.3	1.9
Heavy Metals						
Aluminium	0.05	mg/L	0.34	0.28	4.0	0.35
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.004	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.011	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.011	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Iron	0.05	mg/L	0.72	0.59	3.0	7.9
Iron (filtered)	0.05	mg/L	< 0.05	0.12	< 0.05	0.43
Lead	0.001	mg/L	< 0.001	< 0.001	0.007	< 0.001

Client Sample ID			MW45 Water	MW46 Water	MW47 Water	MW51 Water
Sample Matrix			M16-Oc24202	M16-Oc24203	M16-Oc24204	M16-Oc24205
Eurofins mgt Sample No.			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.031	0.014	0.006
Manganese (filtered)	0.005	mg/L	< 0.005	0.030	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.006	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.032	0.022	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	0.028	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	71	150	49	29
Magnesium	0.5	mg/L	40	140	37	130
Potassium	0.5	mg/L	5.0	7.1	3.6	27
Sodium	0.5	mg/L	230	820	290	810

Client Sample ID			SWL18_1 Water	SWL18_2 Water	SWL18_3 Water	SWL20_1 Water
Sample Matrix			M16-Oc24206	M16-Oc24207	M16-Oc24208	M16-Oc24209
Eurofins mgt Sample No.			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	560	560	630	930
Conductivity (at 25°C)	1	uS/cm	1900	2000	1900	2700
pH	0.1	pH Units	7.6	7.4	7.5	6.9
Phosphate total (as P)	0.05	mg/L	0.49	0.49	0.49	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.42	0.43	0.43	< 0.05
Sulphate (as S)	5	mg/L	14	14	14	27
Total Dissolved Solids	10	mg/L	1300	1200	1300	1900
Turbidity	1	NTU	12	13	12	6.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	60	70	60	25
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	60	70	60	25
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.06	0.04	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	0.05	0.08	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	0.03	0.06	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.3	1.4	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	1.4	1.4	1.1
Total Nitrogen (as N)	0.2	mg/L	1.5	1.5	1.5	1.1

Client Sample ID			SWL18_1	SWL18_2	SWL18_3	SWL20_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc24206	M16-Oc24207	M16-Oc24208	M16-Oc24209
Date Sampled			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.16	0.16	0.14	0.07
Aluminium (filtered)	0.05	mg/L	0.10	0.10	0.10	< 0.05
Arsenic	0.001	mg/L	0.001	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.7	2.7	2.5	2.5
Iron (filtered)	0.05	mg/L	1.3	1.3	1.4	0.86
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.044	0.045	0.041	0.011
Manganese (filtered)	0.005	mg/L	0.016	0.017	0.020	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	28	28	28	10
Magnesium	0.5	mg/L	54	56	55	60
Potassium	0.5	mg/L	9.5	9.7	9.6	11
Sodium	0.5	mg/L	310	320	320	560
Pathogens						
E.coli	1	MPN/100mL	170	110	160	52
Thermotolerant Coliforms	1	MPN/100mL	660	610	560	280

Client Sample ID			SWL20_2	SWL20_3	QC218	QC219
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc24210	M16-Oc24211	M16-Oc24212	M16-Oc24213
Date Sampled			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	11	< 10
Chloride	1	mg/L	980	950	1600	450
Conductivity (at 25°C)	1	uS/cm	2900	3200	5700	1600
pH	0.1	pH Units	6.9	6.8	7.9	8.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.14	0.17
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	0.12
Sulphate (as S)	5	mg/L	27	27	89	10
Total Dissolved Solids	10	mg/L	1900	1900	4000	1000
Turbidity	1	NTU	6.3	6.2	-	-

Client Sample ID			SWL20_2	SWL20_3	QC218	QC219
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc24210	M16-Oc24211	M16-Oc24212	M16-Oc24213
Date Sampled			Oct 25, 2016	Oct 25, 2016	Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	21	22	390	170
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	21	22	390	170
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.07	0.06	0.43	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.02	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	0.8	0.8	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	0.9	1.2	0.3
Total Nitrogen (as N)	0.2	mg/L	1.0	0.9	1.2	0.3
Heavy Metals						
Aluminium	0.05	mg/L	0.07	0.07	0.25	1.9
Aluminium (filtered)	0.05	mg/L	0.05	0.06	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.008
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	2.2	0.60	1.1
Iron (filtered)	0.05	mg/L	0.88	0.81	0.09	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.012	0.010	0.029	0.010
Manganese (filtered)	0.005	mg/L	0.008	0.007	0.030	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	0.002	0.002	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.007	0.024	0.018
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.021	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	10	9.9	150	47
Magnesium	0.5	mg/L	61	59	130	35
Potassium	0.5	mg/L	12	11	6.9	3.3
Sodium	0.5	mg/L	550	560	800	290
Pathogens						
E.coli	1	MPN/100mL	20	52	-	-
Thermotolerant Coliforms	1	MPN/100mL	1500	580	-	-

Client Sample ID			QC220	QC222
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Oc24214	M16-Oc24215
Date Sampled			Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	< 10	-
Chloride	1	mg/L	460	-
Conductivity (at 25°C)	1	uS/cm	1500	-
pH	0.1	pH Units	8.0	-
Phosphate total (as P)	0.05	mg/L	0.11	-
Phosphorus reactive (as P)	0.05	mg/L	0.09	-
Sulphate (as S)	5	mg/L	< 5	-
Total Dissolved Solids	10	mg/L	980	-
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	210	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	210	-
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	0.23	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.2	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	-
Total Nitrogen (as N)	0.2	mg/L	0.4	-
Heavy Metals				
Aluminium	0.05	mg/L	0.51	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	-
Nickel (filtered)	0.001	mg/L	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Client Sample ID			QC220	QC222
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Oc24214	M16-Oc24215
Date Sampled			Oct 25, 2016	Oct 25, 2016
Test/Reference	LOR	Unit		
Alkali Metals				
Calcium	0.5	mg/L	48	-
Magnesium	0.5	mg/L	35	-
Potassium	0.5	mg/L	3.4	-
Sodium	0.5	mg/L	250	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 26, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 26, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 26, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 26, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 26, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 26, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 26, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 26, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 27, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 26, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 26, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 26, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 26, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 26, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 26, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 26, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 28, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 28, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Oct 28, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 26, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 26, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 521097 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Oct 26, 2016 8:17 AM Due: Nov 3, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphorus total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X												X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X					X	X			X
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																							
1	MW45	Oct 25, 2016		Water	M16-Oc24202	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW46	Oct 25, 2016		Water	M16-Oc24203	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW47	Oct 25, 2016		Water	M16-Oc24204	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW51	Oct 25, 2016		Water	M16-Oc24205	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	SWL18_1	Oct 25, 2016		Water	M16-Oc24206	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	SWL18_2	Oct 25, 2016		Water	M16-Oc24207	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	SWL18_3	Oct 25, 2016		Water	M16-Oc24208	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	SWL20_1	Oct 25, 2016		Water	M16-Oc24209	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	SWL20_2	Oct 25, 2016		Water	M16-Oc24210	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	SWL20_3	Oct 25, 2016		Water	M16-Oc24211	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 26, 2016 8:17 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 521097	Due: Nov 3, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Thermolabile Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X									X	X	X											X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X			X	X							X	X		X		
Brisbane Laboratory - NATA Site # 20794																																													
External Laboratory																																													
11	QC218	Oct 25, 2016		Water	M16-Oc24212	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	QC219	Oct 25, 2016		Water	M16-Oc24213	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	QC220	Oct 25, 2016		Water	M16-Oc24214	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	QC222	Oct 25, 2016		Water	M16-Oc24215			X	X		X				X		X			X		X		X		X		X				X								X					
Test Counts						13	13	14	13	14	13	14	13	13	14	13	13	14	6	13	14	13	14	13	14	13	14	13	14	13	13	13	13	13	14	13	6	13	6	13	14	13	13	13	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	102		70-130	Pass	
Chloride	%	118		70-130	Pass	
Phosphate total (as P)	%	95		70-130	Pass	
Phosphorus reactive (as P)	%	108		70-130	Pass	
Sulphate (as S)	%	114		70-130	Pass	
Total Dissolved Solids	%	90		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	104		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	106		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	%	89		70-130	Pass	
Nitrate (as N)	%	89		70-130	Pass	
Nitrite (as N)	%	101		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	90		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	83		70-130	Pass	
Aluminium (filtered)	%	96		70-130	Pass	
Arsenic	%	94		70-130	Pass	
Arsenic (filtered)	%	91		70-130	Pass	
Cadmium	%	94		70-130	Pass	
Cadmium (filtered)	%	95		70-130	Pass	
Chromium	%	92		70-130	Pass	
Chromium (filtered)	%	94		70-130	Pass	
Copper	%	89		70-130	Pass	
Copper (filtered)	%	95		70-130	Pass	
Iron	%	85		70-130	Pass	
Iron (filtered)	%	100		70-130	Pass	
Lead	%	96		70-130	Pass	
Lead (filtered)	%	97		70-130	Pass	
Manganese	%	88		70-130	Pass	
Manganese (filtered)	%	95		70-130	Pass	
Mercury	%	107		70-130	Pass	
Mercury (filtered)	%	93		70-130	Pass	
Nickel	%	91		70-130	Pass	
Nickel (filtered)	%	96		70-130	Pass	
Selenium	%	91		70-130	Pass	
Selenium (filtered)	%	103		70-130	Pass	
Zinc	%	93		70-130	Pass	
Zinc (filtered)	%	96		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	111		70-130	Pass	
Magnesium	%	109		70-130	Pass	
Potassium	%	101		70-130	Pass	
Sodium	%	97		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Oc24402	NCP	%	112		70-130	Pass	
Phosphorus reactive (as P)	M16-Oc24202	CP	%	130		70-130	Pass	
Sulphate (as S)	M16-Oc24624	NCP	%	117		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Oc22547	NCP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc22547	NCP	%	81		70-130	Pass	
Nitrate (as N)	M16-Oc22547	NCP	%	81		70-130	Pass	
Nitrite (as N)	M16-Oc22547	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	S16-Oc25804	NCP	%	106		70-130	Pass	
Magnesium	S16-Oc25804	NCP	%	105		70-130	Pass	
Potassium	S16-Oc25804	NCP	%	99		70-130	Pass	
Sodium	S16-Oc25804	NCP	%	75		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Oc24203	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc24203	CP	%	86		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium (filtered)	M16-Oc24208	CP	%	106		70-130	Pass	
Arsenic (filtered)	M16-Oc24208	CP	%	100		70-130	Pass	
Cadmium (filtered)	M16-Oc24208	CP	%	99		70-130	Pass	
Chromium (filtered)	M16-Oc24208	CP	%	99		70-130	Pass	
Copper (filtered)	M16-Oc24208	CP	%	89		70-130	Pass	
Iron (filtered)	M16-Oc24208	CP	%	126		70-130	Pass	
Lead (filtered)	M16-Oc24208	CP	%	88		70-130	Pass	
Manganese (filtered)	M16-Oc24208	CP	%	98		70-130	Pass	
Mercury (filtered)	M16-Oc24208	CP	%	75		70-130	Pass	
Nickel (filtered)	M16-Oc24208	CP	%	92		70-130	Pass	
Selenium (filtered)	M16-Oc24208	CP	%	104		70-130	Pass	
Zinc (filtered)	M16-Oc24208	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Oc24211	CP	%	103		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Oc24211	CP	%	97		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc24213	CP	%	118		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Oc24214	CP	%	94		70-130	Pass	
Cadmium	M16-Oc24214	CP	%	93		70-130	Pass	
Chromium	M16-Oc24214	CP	%	96		70-130	Pass	
Copper	M16-Oc24214	CP	%	82		70-130	Pass	
Lead	M16-Oc24214	CP	%	89		70-130	Pass	
Manganese	M16-Oc24214	CP	%	91		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Mercury	M16-Oc24214	CP	%	102			70-130	Pass	
Nickel	M16-Oc24214	CP	%	87			70-130	Pass	
Selenium	M16-Oc24214	CP	%	90			70-130	Pass	
Zinc	M16-Oc24214	CP	%	82			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Oc24202	CP	uS/cm	1700	1700	1.0	30%	Pass	
pH	M16-Oc24202	CP	pH Units	7.7	7.8	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Oc24202	CP	mg/L	0.05	< 0.05	6.5	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc24202	CP	mg/L	230	240	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc24202	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc24202	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc24202	CP	mg/L	230	240	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-Oc22547	NCP	mg/L	0.05	0.05	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-Oc22547	NCP	mg/L	1.4	1.4	1.0	30%	Pass	
Nitrate (as N)	M16-Oc22547	NCP	mg/L	1.4	1.4	1.0	30%	Pass	
Nitrite (as N)	M16-Oc22547	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	S16-Oc25803	NCP	mg/L	2.4	2.5	3.0	30%	Pass	
Magnesium	S16-Oc25803	NCP	mg/L	3.6	3.7	3.0	30%	Pass	
Potassium	S16-Oc25803	NCP	mg/L	1.3	1.3	<1	30%	Pass	
Sodium	S16-Oc25803	NCP	mg/L	18	19	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Oc24203	CP	mg/L	0.06	0.05	8.3	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Oc24205	CP	mg/L	1400	1400	3.8	30%	Pass	
Sulphate (as S)	M16-Oc24205	CP	mg/L	56	57	1.8	30%	Pass	
Total Dissolved Solids	M16-Oc24205	CP	mg/L	2700	2800	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-Oc24206	CP	NTU	12	12	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium (filtered)	M16-Oc24207	CP	mg/L	0.10	0.10	5.0	30%	Pass	
Arsenic (filtered)	M16-Oc24207	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc24207	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc24207	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc24207	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Oc24207	CP	mg/L	1.3	1.5	8.0	30%	Pass	
Lead (filtered)	M16-Oc24207	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc24207	CP	mg/L	0.017	0.018	2.0	30%	Pass	
Mercury (filtered)	M16-Oc24207	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc24207	CP	mg/L	0.002	0.002	1.0	30%	Pass	
Selenium (filtered)	M16-Oc24207	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Oc24207	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-Oc24210	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Oc24210	CP	mg/L	1.0	0.9	4.3	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Oc24212	CP	mg/L	11	11	4.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Oc24213	CP	mg/L	1.9	1.8	7.0	30%	Pass	
Arsenic	M16-Oc24213	CP	mg/L	0.002	0.002	3.0	30%	Pass	
Cadmium	M16-Oc24213	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-Oc24213	CP	mg/L	0.008	0.005	42	30%	Fail	Q15
Copper	M16-Oc24213	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M16-Oc24213	CP	mg/L	0.003	0.003	5.0	30%	Pass	
Manganese	M16-Oc24213	CP	mg/L	0.010	0.010	1.0	30%	Pass	
Mercury	M16-Oc24213	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc24213	CP	mg/L	0.003	0.003	2.0	30%	Pass	
Selenium	M16-Oc24213	CP	mg/L	0.002	0.002	<1	30%	Pass	
Zinc	M16-Oc24213	CP	mg/L	0.018	0.011	48	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Oc24214	CP	mg/L	0.09	0.08	2.6	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Oc24214	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M16-Oc24214	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc24214	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc24214	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc24214	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Oc24214	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-Oc24214	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc24214	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M16-Oc24214	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc24214	CP	mg/L	0.002	0.001	1.0	30%	Pass	
Selenium (filtered)	M16-Oc24214	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Oc24214	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 27, 2016 8:23 AM**
Eurofins | mgt reference: **521286**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **521286-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Oct 27, 2016**

Client Sample ID			MW33	MW34	MW35	MW36
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc25343	M16-Oc25344	M16-Oc25345	M16-Oc25346
Date Sampled			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	34	91	94	14
Chloride	1	mg/L	64	59	44	14
Conductivity (at 25°C)	1	uS/cm	350	300	210	140
pH	0.1	pH Units	6.7	5.4	4.2	6.5
Phosphate total (as P)	0.05	mg/L	0.09	1.0	1.2	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.07	1.6	1.4	0.12
Sulphate (as S)	5	mg/L	< 5	8.3	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 270	^{Q19} 530	^{Q19} 370	^{Q19} 110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	76	29	< 20	25
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	76	29	< 20	25
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.35	0.24	0.27	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.11	3.5
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	3.5
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.12	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	1.4	0.9	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	1.6	1.2	0.9
Total Nitrogen (as N)	0.2	mg/L	0.9	1.6	1.3	4.4
Heavy Metals						
Aluminium	0.05	mg/L	0.27	1.1	0.45	< 0.05
Aluminium (filtered)	0.05	mg/L	0.22	0.97	0.39	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.003	0.002	0.021
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	0.002	0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Iron	0.05	mg/L	0.09	1.6	0.28	0.10
Iron (filtered)	0.05	mg/L	0.10	1.4	0.24	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW33 Water	MW34 Water	MW35 Water	MW36 Water
Sample Matrix			M16-Oc25343	M16-Oc25344	M16-Oc25345	M16-Oc25346
Eurofins mgt Sample No.			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	28	16	8.8	12
Magnesium	0.5	mg/L	5.5	7.9	3.0	1.3
Potassium	0.5	mg/L	3.0	16	14	< 0.5
Sodium	0.5	mg/L	37	40	23	4.6

Client Sample ID			MW37 Water	MW38 Water	MW39 Water	MW40 Water
Sample Matrix			M16-Oc25347	M16-Oc25348	M16-Oc25349	M16-Oc25350
Eurofins mgt Sample No.			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	34	62	24	44
Chloride	1	mg/L	22	160	80	87
Conductivity (at 25°C)	1	uS/cm	100	700	380	320
pH	0.1	pH Units	4.8	6.2	6.5	5.1
Phosphate total (as P)	0.05	mg/L	0.11	0.67	1.0	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.14	0.75	1.00	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 130	440	^{Q19} 260	^{Q19} 210
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	66	48	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	66	48	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.13	0.70	0.57	0.29
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.03	0.03	0.04	0.05
Organic Nitrogen (as N)	0.2	mg/L	1.7	1.6	1.3	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	2.3	1.9	1.2
Total Nitrogen (as N)	0.2	mg/L	1.8	2.3	1.9	1.2

Client Sample ID			MW37 Water	MW38 Water	MW39 Water	MW40 Water
Sample Matrix			M16-Oc25347	M16-Oc25348	M16-Oc25349	M16-Oc25350
Eurofins mgt Sample No.			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.24	0.44	0.20	1.4
Aluminium (filtered)	0.05	mg/L	0.21	0.36	0.17	1.3
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.007	0.005	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.36	0.68	0.30
Iron (filtered)	0.05	mg/L	0.05	0.29	0.59	0.27
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.012	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.011	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.017	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.017	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	4.9	25	16	2.7
Magnesium	0.5	mg/L	1.8	13	7.1	7.4
Potassium	0.5	mg/L	1.0	18	11	1.8
Sodium	0.5	mg/L	12	80	47	49

Client Sample ID			MW41 Water	MW42 Water	MW43 Water	MW44 Water
Sample Matrix			M16-Oc25351	M16-Oc25352	M16-Oc25353	M16-Oc25354
Eurofins mgt Sample No.			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	140	41	73	19
Chloride	1	mg/L	210	49	1200	350
Conductivity (at 25°C)	1	uS/cm	760	210	4000	1400
pH	0.1	pH Units	3.7	4.4	6.3	7.2
Phosphate total (as P)	0.05	mg/L	0.60	< 0.05	0.11	0.55
Phosphorus reactive (as P)	0.05	mg/L	0.95	< 0.05	0.05	0.15
Sulphate (as S)	5	mg/L	9.2	< 5	13	28
Total Dissolved Solids	10	mg/L	^{Q19} 680	^{Q19} 150	^{Q19} 2600	^{Q19} 1100
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	150	190
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	150	190

Client Sample ID			MW41 Water	MW42 Water	MW43 Water	MW44 Water
Sample Matrix			M16-Oc25351	M16-Oc25352	M16-Oc25353	M16-Oc25354
Eurofins mgt Sample No.			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.67	0.27	1.2	0.45
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.16	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.13	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	4.9	< 1	3.5	3.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.6	1.6	4.7	3.9
Total Nitrogen (as N)	0.2	mg/L	5.6	1.6	4.9	3.9
Heavy Metals						
Aluminium	0.05	mg/L	1.7	0.34	2.2	1.7
Aluminium (filtered)	0.05	mg/L	1.7	0.27	1.1	0.08
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.004	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.003
Cadmium	0.00005	mg/L	0.00015	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00016	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.011	0.009
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	0.005	0.002
Copper	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.0	0.13	0.33	0.73
Iron (filtered)	0.05	mg/L	0.86	0.12	0.07	0.25
Lead	0.001	mg/L	0.001	0.001	0.003	0.003
Lead (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.003	0.002
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.001	0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.003	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Zinc	0.005	mg/L	0.015	< 0.005	< 0.005	0.009
Zinc (filtered)	0.005	mg/L	0.015	< 0.005	< 0.005	0.007
Alkali Metals						
Calcium	0.5	mg/L	9.1	1.4	68	18
Magnesium	0.5	mg/L	12	4.1	120	30
Potassium	0.5	mg/L	3.0	1.1	8.5	3.4
Sodium	0.5	mg/L	120	28	610	240

Client Sample ID			SWL17_1	SWL17_2	SWL16_1	SWL16_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc25355	M16-Oc25356	M16-Oc25357	M16-Oc25358
Date Sampled			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	46	37	25	11
Chloride	1	mg/L	84	86	110	94
Conductivity (at 25°C)	1	uS/cm	310	290	530	400
pH	0.1	pH Units	3.9	4.0	6.4	6.8
Phosphate total (as P)	0.05	mg/L	0.10	0.08	0.89	0.74
Phosphorus reactive (as P)	0.05	mg/L	0.05	0.08	1.3	0.65
Sulphate (as S)	5	mg/L	< 5	< 5	12	< 5
Total Dissolved Solids	10	mg/L	210	210	370	290
Turbidity	1	NTU	16	5.7	2.0	13
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	42	34
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	42	34
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.07	0.09	0.05	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.13	0.17
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.09	0.15
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.05	0.02
Organic Nitrogen (as N)	0.2	mg/L	2.2	1.9	2.1	2.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.3	2.0	2.1	2.2
Total Nitrogen (as N)	0.2	mg/L	2.3	2.0	2.2	2.4
Heavy Metals						
Aluminium	0.05	mg/L	0.53	0.44	0.27	0.20
Aluminium (filtered)	0.05	mg/L	0.45	0.40	0.25	0.15
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.002	0.003	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.035	< 0.001	< 0.001
Iron	0.05	mg/L	0.45	0.24	0.23	0.64
Iron (filtered)	0.05	mg/L	0.34	0.21	0.21	0.34
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.013
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL17_1	SWL17_2	SWL16_1	SWL16_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc25355	M16-Oc25356	M16-Oc25357	M16-Oc25358
Date Sampled			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	2.3	2.1	20	16
Magnesium	0.5	mg/L	6.8	5.6	12	7.5
Potassium	0.5	mg/L	3.1	1.2	15	10
Sodium	0.5	mg/L	42	35	61	45
Pathogens						
E.coli	1	MPN/100mL	97	480	31	200
Thermotolerant Coliforms	1	MPN/100mL	97	660	86	230

Client Sample ID			SWL16_3	SWL15_1	SWL15_2	QC223
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc25359	M16-Oc25360	M16-Oc25361	M16-Oc25362
Date Sampled			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	30	31	10
Chloride	1	mg/L	110	73	74	90
Conductivity (at 25°C)	1	uS/cm	440	310	310	390
pH	0.1	pH Units	6.8	4.3	4.3	6.9
Phosphate total (as P)	0.05	mg/L	0.51	< 0.05	< 0.05	0.96
Phosphorus reactive (as P)	0.05	mg/L	0.54	< 0.05	< 0.05	0.66
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	320	^{Q19} 290	^{Q19} 270	300
Turbidity	1	NTU	34	2.4	4.3	26
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	40	< 20	< 20	35
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	40	< 20	< 20	35
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.05	0.05	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.19
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.16
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	3.2	1.6	1.7	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.3	1.6	1.7	2.4
Total Nitrogen (as N)	0.2	mg/L	3.3	1.6	1.7	2.6
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.46	0.49	0.19
Aluminium (filtered)	0.05	mg/L	0.15	0.44	0.43	0.17
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.015	< 0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.67	0.20	0.21	0.59

Client Sample ID			SWL16_3	SWL15_1	SWL15_2	QC223
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc25359	M16-Oc25360	M16-Oc25361	M16-Oc25362
Date Sampled			Oct 26, 2016	Oct 26, 2016	Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.40	0.18	0.17	0.36
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.013	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.011	0.012	< 0.005
Zinc (filtered)	0.005	mg/L	0.007	0.011	0.012	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	19	4.7	4.8	16
Magnesium	0.5	mg/L	8.7	5.7	5.8	7.6
Potassium	0.5	mg/L	14	< 0.5	< 0.5	10
Sodium	0.5	mg/L	50	43	43	45
Pathogens						
E.coli	1	MPN/100mL	31	10	10	63
Thermotolerant Coliforms	1	MPN/100mL	200	740	190	310

Client Sample ID			QC225	QC226
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-Oc25363	M16-Oc25364
Date Sampled			Oct 26, 2016	Oct 26, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 27, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 27, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 27, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 27, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 27, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 27, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 27, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 27, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 28, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 27, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 27, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 27, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 27, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 27, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 27, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 27, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 31, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 31, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 31, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Oct 31, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 27, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 27, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 27, 2016 8:23 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 521286	Due: Nov 4, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X						X	X		X
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																							
1	MW33	Oct 26, 2016		Water	M16-Oc25343	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW34	Oct 26, 2016		Water	M16-Oc25344	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW35	Oct 26, 2016		Water	M16-Oc25345	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW36	Oct 26, 2016		Water	M16-Oc25346	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW37	Oct 26, 2016		Water	M16-Oc25347	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW38	Oct 26, 2016		Water	M16-Oc25348	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW39	Oct 26, 2016		Water	M16-Oc25349	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8	MW40	Oct 26, 2016		Water	M16-Oc25350	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9	MW41	Oct 26, 2016		Water	M16-Oc25351	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	MW42	Oct 26, 2016		Water	M16-Oc25352	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 27, 2016 8:23 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 521286	Due: Nov 4, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermoliant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X												X	X	X						X	X	X	X	X	X	X				
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						X	X	X	X	X			
Brisbane Laboratory - NATA Site # 20794																																														
External Laboratory																																														
11	MW43	Oct 26, 2016		Water	M16-Oc25353	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	MW44	Oct 26, 2016		Water	M16-Oc25354	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL17_1	Oct 26, 2016		Water	M16-Oc25355	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL17_2	Oct 26, 2016		Water	M16-Oc25356	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL16_1	Oct 26, 2016		Water	M16-Oc25357	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	SWL16_2	Oct 26, 2016		Water	M16-Oc25358	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL16_3	Oct 26, 2016		Water	M16-Oc25359	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL15_1	Oct 26, 2016		Water	M16-Oc25360	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL15_2	Oct 26, 2016		Water	M16-Oc25361	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	QC223	Oct 26, 2016		Water	M16-Oc25362	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
21	QC225	Oct 26, 2016		Water	M16-Oc25363			X	X	X				X		X		X		X	X	X	X	X	X	X	X	X																		
22	QC226	Oct 26, 2016		Water	M16-Oc25364			X	X	X	X			X		X		X		X	X	X	X	X	X	X	X	X																		

Company Name: Coffey Environments Pty Ltd WA	Order No.: _____	Received: Oct 27, 2016 8:23 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 521286	Due: Nov 4, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail	Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Thermotolerant Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271	X							X			X			X										X	X	X			X	X	X	X			X		X
Sydney Laboratory - NATA Site # 18217		X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X			X	X					X	X		X	
Brisbane Laboratory - NATA Site # 20794																																					
External Laboratory																																					
Test Counts	20	20	22	20	22	20	22	20	20	22	20	20	22	8	20	22	20	22	20	22	20	22	20	22	20	20	20	20	22	20	8	20	8	20	22	20	20

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	102			70-130	Pass	
Chloride	%	119			70-130	Pass	
Phosphate total (as P)	%	123			70-130	Pass	
Phosphorus reactive (as P)	%	117			70-130	Pass	
Sulphate (as S)	%	117			70-130	Pass	
Total Dissolved Solids	%	89			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	100			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	105			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	91			70-130	Pass	
Nitrate & Nitrite (as N)	%	93			70-130	Pass	
Nitrate (as N)	%	93			70-130	Pass	
Nitrite (as N)	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	85			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	80			70-130	Pass	
Aluminium (filtered)	%	88			70-130	Pass	
Arsenic	%	88			70-130	Pass	
Arsenic (filtered)	%	94			70-130	Pass	
Cadmium	%	87			70-130	Pass	
Cadmium (filtered)	%	92			70-130	Pass	
Chromium	%	90			70-130	Pass	
Chromium (filtered)	%	94			70-130	Pass	
Copper	%	88			70-130	Pass	
Copper (filtered)	%	93			70-130	Pass	
Iron	%	79			70-130	Pass	
Iron (filtered)	%	84			70-130	Pass	
Lead	%	88			70-130	Pass	
Lead (filtered)	%	95			70-130	Pass	
Manganese	%	83			70-130	Pass	
Manganese (filtered)	%	90			70-130	Pass	
Mercury	%	99			70-130	Pass	
Mercury (filtered)	%	97			70-130	Pass	
Nickel	%	89			70-130	Pass	
Nickel (filtered)	%	94			70-130	Pass	
Selenium	%	88			70-130	Pass	
Selenium (filtered)	%	86			70-130	Pass	
Zinc	%	88			70-130	Pass	
Zinc (filtered)	%	94			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	105			70-130	Pass	
Magnesium	%	107			70-130	Pass	
Potassium	%	99			70-130	Pass	
Sodium	%	103			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	B16-Oc24503	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Oc25042	NCP	%	128		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Oc24369	NCP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc24402	NCP	%	89		70-130	Pass	
Nitrate (as N)	M16-Oc24402	NCP	%	89		70-130	Pass	
Nitrite (as N)	M16-Oc24369	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-Oc24214	NCP	%	94		70-130	Pass	
Cadmium	M16-Oc24214	NCP	%	93		70-130	Pass	
Chromium	M16-Oc24214	NCP	%	96		70-130	Pass	
Copper	M16-Oc24214	NCP	%	82		70-130	Pass	
Lead	M16-Oc24214	NCP	%	89		70-130	Pass	
Manganese	M16-Oc24214	NCP	%	91		70-130	Pass	
Mercury	M16-Oc24214	NCP	%	102		70-130	Pass	
Mercury (filtered)	S16-Oc27961	NCP	%	99		70-130	Pass	
Nickel	M16-Oc24214	NCP	%	87		70-130	Pass	
Selenium	M16-Oc24214	NCP	%	90		70-130	Pass	
Zinc	M16-Oc24214	NCP	%	82		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Oc26462	NCP	%	89		70-130	Pass	
Magnesium	M16-Oc26462	NCP	%	96		70-130	Pass	
Potassium	M16-Oc26462	NCP	%	94		70-130	Pass	
Sodium	M16-Oc26462	NCP	%	74		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25344	CP	%	122		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium (filtered)	M16-Oc25344	CP	%	103		70-130	Pass	
Arsenic (filtered)	M16-Oc25344	CP	%	99		70-130	Pass	
Cadmium (filtered)	M16-Oc25344	CP	%	98		70-130	Pass	
Chromium (filtered)	M16-Oc25344	CP	%	96		70-130	Pass	
Copper (filtered)	M16-Oc25344	CP	%	92		70-130	Pass	
Lead (filtered)	M16-Oc25344	CP	%	93		70-130	Pass	
Manganese (filtered)	M16-Oc25344	CP	%	92		70-130	Pass	
Nickel (filtered)	M16-Oc25344	CP	%	94		70-130	Pass	
Selenium (filtered)	M16-Oc25344	CP	%	81		70-130	Pass	
Zinc (filtered)	M16-Oc25344	CP	%	102		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Oc25347	CP	%	81		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-Oc25348	CP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphate total (as P)	M16-Oc25352	CP	%	86			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as S)	M16-Oc25354	CP	%	107			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)									
				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25354	CP	%	93			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Oc25360	CP	%	104			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	P16-Oc24776	NCP	mg/L	0.18	0.17	10	30%	Pass	
Nitrate & Nitrite (as N)	P16-Oc24776	NCP	mg/L	0.08	0.08	1.0	30%	Pass	
Nitrate (as N)	P16-Oc24776	NCP	mg/L	0.08	0.08	1.0	30%	Pass	
Nitrite (as N)	P16-Oc24776	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P16-Oc25917	NCP	mg/L	0.8	1.0	24	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Oc25343	CP	mg/L	0.22	0.22	1.0	30%	Pass	
Arsenic (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc25343	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Oc25343	CP	mg/L	0.10	0.10	1.0	30%	Pass	
Lead (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc25343	CP	mg/L	0.008	0.008	2.0	30%	Pass	
Mercury (filtered)	M16-Oc25343	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Oc25343	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Oc25343	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Potassium	M16-Oc26461	NCP	mg/L	5.6	5.5	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Oc25344	CP	mg/L	91	87	5.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M16-Oc25346	CP	mg/L	< 0.05	0.05	27	30%	Pass	
Arsenic	M16-Oc25346	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-Oc25346	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Copper	M16-Oc25346	CP	mg/L	0.001	< 0.001	88	30%	Fail	Q15
Iron	M16-Oc25346	CP	mg/L	0.10	< 0.05	87	30%	Fail	Q15
Lead	M16-Oc25346	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Oc25346	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-Oc25346	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc25346	CP	mg/L	0.001	< 0.001	18	30%	Pass	
Selenium	M16-Oc25346	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-Oc25346	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Oc25347	CP	mg/L	0.14	0.14	<1	30%	Pass	
Total Dissolved Solids	M16-Oc25347	CP	mg/L	130	130	3.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc25349	CP	uS/cm	380	380	1.0	30%	Pass
pH	M16-Oc25349	CP	pH Units	6.5	6.5	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25349	CP	mg/L	48	47	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25349	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc25349	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc25349	CP	mg/L	48	47	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc25351	CP	uS/cm	760	760	<1	30%	Pass
pH	M16-Oc25351	CP	pH Units	3.7	3.7	pass	30%	Pass
Phosphate total (as P)	M16-Oc25351	CP	mg/L	0.60	0.67	12	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25351	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25351	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc25351	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc25351	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Oc25353	CP	mg/L	73	70	4.0	30%	Pass
Chloride	M16-Oc25353	CP	mg/L	1200	1200	8.1	30%	Pass
Conductivity (at 25°C)	M16-Oc25353	CP	uS/cm	4000	3900	2.0	30%	Pass
pH	M16-Oc25353	CP	pH Units	6.3	6.3	pass	30%	Pass
Sulphate (as S)	M16-Oc25353	CP	mg/L	13	16	21	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25353	CP	mg/L	150	150	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25353	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc25353	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc25353	CP	mg/L	150	150	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-Oc25353	CP	mg/L	1.1	1.0	3.0	30%	Pass
Arsenic (filtered)	M16-Oc25353	CP	mg/L	0.002	0.002	<1	30%	Pass
Cadmium (filtered)	M16-Oc25353	CP	mg/L	< 0.00005	0.00013	200	30%	Fail
Chromium (filtered)	M16-Oc25353	CP	mg/L	0.005	0.005	1.0	30%	Pass
Copper (filtered)	M16-Oc25353	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-Oc25353	CP	mg/L	0.07	0.07	2.0	30%	Pass
Lead (filtered)	M16-Oc25353	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-Oc25353	CP	mg/L	0.007	0.006	2.0	30%	Pass
Mercury (filtered)	M16-Oc25353	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-Oc25353	CP	mg/L	0.001	0.001	3.0	30%	Pass
Selenium (filtered)	M16-Oc25353	CP	mg/L	0.002	0.002	9.0	30%	Pass
Zinc (filtered)	M16-Oc25353	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Oc25354	CP	mg/L	19	19	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-Oc25367	NCP	NTU	5.4	5.5	1.0	30%	Pass

Q15

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Oc25356	CP	mg/L	0.44	0.48	9.0	30%	Pass
Arsenic	M16-Oc25356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-Oc25356	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Oc25356	CP	mg/L	0.002	0.003	28	30%	Pass
Copper	M16-Oc25356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Oc25356	CP	mg/L	0.24	0.28	12	30%	Pass
Lead	M16-Oc25356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-Oc25356	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-Oc25356	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-Oc25356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-Oc25356	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-Oc25356	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Oc25356	CP	mg/L	2.1	2.2	7.0	30%	Pass
Magnesium	M16-Oc25356	CP	mg/L	5.6	6.1	8.0	30%	Pass
Sodium	M16-Oc25356	CP	mg/L	35	37	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc25359	CP	uS/cm	440	440	<1	30%	Pass
pH	M16-Oc25359	CP	pH Units	6.8	6.9	pass	30%	Pass
Phosphorus reactive (as P)	M16-Oc25359	CP	mg/L	0.54	0.54	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25359	CP	mg/L	40	41	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25359	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc25359	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc25359	CP	mg/L	40	41	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-Oc25361	CP	uS/cm	310	310	<1	30%	Pass
pH	M16-Oc25361	CP	pH Units	4.3	4.3	pass	30%	Pass
Total Dissolved Solids	M16-Oc25361	CP	mg/L	270	280	4.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc25361	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25361	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc25361	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc25361	CP	mg/L	< 20	< 20	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 28, 2016 8:37 AM**
Eurofins | mgt reference: **521478**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **521478-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Oct 28, 2016**

Client Sample ID			MW1	MW5	MW6	MW7
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc26455	M16-Oc26456	M16-Oc26457	M16-Oc26458
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	22	28	37
Chloride	1	mg/L	37	23	180	34
Conductivity (at 25°C)	1	uS/cm	340	96	930	200
pH	0.1	pH Units	7.9	6.5	7.2	4.3
Phosphate total (as P)	0.05	mg/L	0.12	0.06	0.13	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	8.6	< 5	47	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 260	^{Q19} 160	650	^{Q19} 130
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	75	< 20	76	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	75	< 20	76	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.05	0.25	0.28
Nitrate & Nitrite (as N)	0.05	mg/L	7.8	< 0.05	6.0	3.4
Nitrate (as N)	0.02	mg/L	7.7	< 0.02	5.9	3.3
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.2	1.3	2.2	0.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	1.4	2.4	1.2
Total Nitrogen (as N)	0.2	mg/L	9.0	1.4	8.4	4.6
Heavy Metals						
Aluminium	0.05	mg/L	0.64	0.43	3.7	0.69
Aluminium (filtered)	0.05	mg/L	< 0.05	0.40	0.76	0.64
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.003	0.004	< 0.001
Copper (filtered)	0.001	mg/L	0.001	0.003	0.003	< 0.001
Iron	0.05	mg/L	0.12	0.46	0.44	0.81
Iron (filtered)	0.05	mg/L	< 0.05	0.38	0.09	0.15
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW1	MW5	MW6	MW7
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc26455	M16-Oc26456	M16-Oc26457	M16-Oc26458
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.004	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	< 0.005	0.005	0.007
Zinc (filtered)	0.005	mg/L	0.010	< 0.005	< 0.005	0.006
Alkali Metals						
Calcium	0.5	mg/L	36	6.8	58	8.4
Magnesium	0.5	mg/L	3.8	3.2	25	2.8
Potassium	0.5	mg/L	22	1.1	25	1.4
Sodium	0.5	mg/L	20	9.3	110	15

Client Sample ID			MW8	MW9	SW4-1	SW4-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc26459	M16-Oc26460	M16-Oc26461	M16-Oc26462
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	24	< 10	< 10
Chloride	1	mg/L	12	18	150	150
Conductivity (at 25°C)	1	uS/cm	130	100	670	680
pH	0.1	pH Units	5.4	4.7	6.7	6.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.11	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	26	26
Total Dissolved Solids	10	mg/L	^{Q19} 130	^{Q1985}	420	410
Turbidity	1	NTU	-	-	120	16
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.12	0.08	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	6.9	0.19	0.13	0.18
Nitrate (as N)	0.02	mg/L	6.9	0.19	0.12	0.17
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	0.3	2.1	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.4	2.2	0.3
Total Nitrogen (as N)	0.2	mg/L	7.7	0.6	2.3	0.5

Client Sample ID			MW8 Water	MW9 Water	SW4-1 Water	SW4-2 Water
Sample Matrix			M16-Oc26459	M16-Oc26460	M16-Oc26461	M16-Oc26462
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.48	0.79	0.65	0.16
Aluminium (filtered)	0.05	mg/L	0.28	0.46	0.10	0.09
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.007	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	1.1	1.3	0.18
Iron (filtered)	0.05	mg/L	< 0.05	0.15	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.029	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.009	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	< 0.005	0.026	< 0.005
Zinc (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	3.3	22	22
Magnesium	0.5	mg/L	1.3	1.1	15	16
Potassium	0.5	mg/L	< 0.5	0.7	5.6	5.7
Sodium	0.5	mg/L	5.6	9.2	85	89
Pathogens						
E.coli	1	MPN/100mL	-	-	20	M15 <10
Thermotolerant Coliforms	1	MPN/100mL	-	-	130	20

Client Sample ID			SW4-3 Water	QC227 Water	QC228 Water	QC229 Water
Sample Matrix			M16-Oc26463	M16-Oc26464	M16-Oc26465	M16-Oc26466
Eurofins mgt Sample No.			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Chloride	1	mg/L	150	35	-	-
Conductivity (at 25°C)	1	uS/cm	680	390	-	-
pH	0.1	pH Units	7.0	7.7	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	0.09	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.07	-	-
Sulphate (as S)	5	mg/L	26	< 5	-	-
Total Dissolved Solids	10	mg/L	400	270	-	-
Turbidity	1	NTU	6.1	-	-	-

Client Sample ID			SW4-3	QC227	QC228	QC229
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-Oc26463	M16-Oc26464	M16-Oc26465	M16-Oc26466
Date Sampled			Oct 24, 2016	Oct 24, 2016	Oct 24, 2016	Oct 24, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	76	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	76	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.19	8.3	-	-
Nitrate (as N)	0.02	mg/L	0.19	8.2	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.6	1.1	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	1.1	-	-
Total Nitrogen (as N)	0.2	mg/L	0.8	9.4	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.12	0.52	-	-
Aluminium (filtered)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.18	0.11	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.004	0.002	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.009	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	20	35	-	-
Magnesium	0.5	mg/L	15	3.8	-	-
Potassium	0.5	mg/L	5.1	21	-	-
Sodium	0.5	mg/L	80	20	-	-
Pathogens						
E.coli	1	MPN/100mL	M15 <10	-	-	-
Thermotolerant Coliforms	1	MPN/100mL	31	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 28, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 28, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 28, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 28, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 28, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 28, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 28, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Oct 28, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 28, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Oct 28, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Oct 28, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Oct 28, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Oct 28, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Oct 28, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Oct 28, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 03, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 31, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Oct 31, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 03, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Oct 28, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Oct 28, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 521478 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Oct 28, 2016 8:37 AM Due: Nov 7, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphorus total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X					X	X			X
Brisbane Laboratory - NATA Site # 20794																																												
External Laboratory																																												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																							
1	MW1	Oct 24, 2016		Water	M16-Oc26455	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW5	Oct 24, 2016		Water	M16-Oc26456	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW6	Oct 24, 2016		Water	M16-Oc26457	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW7	Oct 24, 2016		Water	M16-Oc26458	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW8	Oct 24, 2016		Water	M16-Oc26459	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW9	Oct 24, 2016		Water	M16-Oc26460	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	SW4-1	Oct 24, 2016		Water	M16-Oc26461	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8	SW4-2	Oct 24, 2016		Water	M16-Oc26462	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9	SW4-3	Oct 24, 2016		Water	M16-Oc26463	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
10	QC227	Oct 24, 2016		Water	M16-Oc26464	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	103			70-130	Pass	
Chloride	%	100			70-130	Pass	
Phosphate total (as P)	%	101			70-130	Pass	
Phosphorus reactive (as P)	%	114			70-130	Pass	
Sulphate (as S)	%	107			70-130	Pass	
Total Dissolved Solids	%	105			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	97			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	106			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	86			70-130	Pass	
Nitrate & Nitrite (as N)	%	93			70-130	Pass	
Nitrate (as N)	%	93			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	91			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	102			70-130	Pass	
Aluminium (filtered)	%	96			70-130	Pass	
Arsenic	%	96			70-130	Pass	
Arsenic (filtered)	%	98			70-130	Pass	
Cadmium	%	96			70-130	Pass	
Cadmium (filtered)	%	100			70-130	Pass	
Chromium	%	101			70-130	Pass	
Chromium (filtered)	%	98			70-130	Pass	
Copper	%	95			70-130	Pass	
Copper (filtered)	%	100			70-130	Pass	
Iron	%	101			70-130	Pass	
Iron (filtered)	%	97			70-130	Pass	
Lead	%	94			70-130	Pass	
Lead (filtered)	%	101			70-130	Pass	
Manganese	%	102			70-130	Pass	
Manganese (filtered)	%	96			70-130	Pass	
Mercury	%	119			70-130	Pass	
Mercury (filtered)	%	99			70-130	Pass	
Nickel	%	92			70-130	Pass	
Nickel (filtered)	%	95			70-130	Pass	
Selenium	%	94			70-130	Pass	
Selenium (filtered)	%	93			70-130	Pass	
Zinc	%	89			70-130	Pass	
Zinc (filtered)	%	96			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	93			70-130	Pass	
Magnesium	%	95			70-130	Pass	
Potassium	%	88			70-130	Pass	
Sodium	%	91			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-Oc26455	CP	%	91		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-Oc25291	NCP	%	106		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-Oc25281	NCP	%	86		70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc25281	NCP	%	88		70-130	Pass	
Nitrate (as N)	M16-Oc25281	NCP	%	88		70-130	Pass	
Nitrite (as N)	M16-Oc25281	NCP	%	94		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-Oc25440	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Mercury (filtered)	S16-No00161	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	M16-Oc26456	CP	%	95		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium (filtered)	M16-Oc26456	CP	%	95		70-130	Pass	
Arsenic (filtered)	M16-Oc26456	CP	%	97		70-130	Pass	
Cadmium (filtered)	M16-Oc26456	CP	%	98		70-130	Pass	
Chromium (filtered)	M16-Oc26456	CP	%	95		70-130	Pass	
Copper (filtered)	M16-Oc26456	CP	%	94		70-130	Pass	
Iron (filtered)	M16-Oc26456	CP	%	78		70-130	Pass	
Lead (filtered)	M16-Oc26456	CP	%	97		70-130	Pass	
Manganese (filtered)	M16-Oc26456	CP	%	93		70-130	Pass	
Nickel (filtered)	M16-Oc26456	CP	%	90		70-130	Pass	
Selenium (filtered)	M16-Oc26456	CP	%	82		70-130	Pass	
Zinc (filtered)	M16-Oc26456	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-Oc26458	CP	%	81		70-130	Pass	
Sulphate (as S)	M16-Oc26458	CP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-Oc26462	CP	%	101		70-130	Pass	
Arsenic	M16-Oc26462	CP	%	97		70-130	Pass	
Cadmium	M16-Oc26462	CP	%	97		70-130	Pass	
Chromium	M16-Oc26462	CP	%	99		70-130	Pass	
Copper	M16-Oc26462	CP	%	93		70-130	Pass	
Iron	M16-Oc26462	CP	%	86		70-130	Pass	
Lead	M16-Oc26462	CP	%	94		70-130	Pass	
Manganese	M16-Oc26462	CP	%	98		70-130	Pass	
Mercury	M16-Oc26462	CP	%	96		70-130	Pass	
Nickel	M16-Oc26462	CP	%	89		70-130	Pass	
Selenium	M16-Oc26462	CP	%	95		70-130	Pass	
Zinc	M16-Oc26462	CP	%	89		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-Oc26462	CP	%	89		70-130	Pass	
Magnesium	M16-Oc26462	CP	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Potassium	M16-Oc26462	CP	%	94			70-130	Pass	
Sodium	M16-Oc26462	CP	%	74			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-Oc26464	CP	%	115			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-Oc26455	CP	mg/L	< 10	< 10	<1	30%	Pass	
Conductivity (at 25°C)	M16-Oc26455	CP	uS/cm	340	350	2.0	30%	Pass	
pH	M16-Oc26455	CP	pH Units	7.9	7.8	pass	30%	Pass	
Phosphorus reactive (as P)	M16-Oc26455	CP	mg/L	0.07	0.09	25	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc26455	CP	mg/L	75	71	6.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc26455	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc26455	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc26455	CP	mg/L	75	71	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-Oc26455	CP	mg/L	0.02	0.02	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-Oc26434	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-Oc26434	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-Oc26455	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium (filtered)	M16-Oc26455	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	S16-Oc25037	NCP	mg/L	0.14	0.15	2.0	30%	Pass	
Arsenic (filtered)	M16-Oc26455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc26455	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc26455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc26455	CP	mg/L	0.001	0.001	1.0	30%	Pass	
Iron (filtered)	M16-Oc26455	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-Oc26455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc26455	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	S16-Oc25036	NCP	mg/L	0.0051	0.0050	2.0	30%	Pass	
Mercury (filtered)	M16-Oc26455	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc26455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S16-Oc25036	NCP	mg/L	0.088	0.093	5.0	30%	Pass	
Selenium (filtered)	M16-Oc26455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-Oc26457	CP	mg/L	650	680	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Oc26458	CP	mg/L	34	29	17	30%	Pass	
Sulphate (as S)	M16-Oc26458	CP	mg/L	< 5	9.9	78	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Oc26459	CP	uS/cm	130	130	1.0	30%	Pass	
pH	M16-Oc26459	CP	pH Units	5.4	5.4	pass	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc26459	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc26459	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc26459	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc26459	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M16-Oc28374	NCP	NTU	3.7	3.6	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-Oc26461	CP	mg/L	2.2	1.4	45	30%	Fail	Q15
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-Oc26461	CP	mg/L	22	21	6.0	30%	Pass	
Magnesium	M16-Oc26461	CP	mg/L	15	15	1.0	30%	Pass	
Potassium	M16-Oc26461	CP	mg/L	5.6	5.5	2.0	30%	Pass	
Sodium	M16-Oc26461	CP	mg/L	85	82	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-Oc26463	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-Oc26464	CP	mg/L	35	35	1.7	30%	Pass	
Phosphate total (as P)	M16-Oc26464	CP	mg/L	0.09	0.09	8.0	30%	Pass	
Sulphate (as S)	M16-Oc26464	CP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-Oc26466	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Oc26466	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-Oc26466	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-Oc26466	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	M16-Oc26466	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-Oc26466	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Oc26466	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Oct 31, 2016 8:00 AM**
Eurofins | mgt reference: **521693**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **521693-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Oct 31, 2016**

Client Sample ID			MW31 Water	MW32 Water	MW27 Water	MW26 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-Oc28347	M16-Oc28348	M16-Oc28349	M16-Oc28350
Date Sampled			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	98	48	71	62
Chloride	1	mg/L	120	210	65	86
Conductivity (at 25°C)	1	uS/cm	340	640	520	430
pH	0.1	pH Units	4.8	6.2	3.4	4.1
Phosphate total (as P)	0.05	mg/L	1.9	1.1	0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	1.9	1.1	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	27	13
Total Dissolved Solids	10	mg/L	^{Q19} 500	^{Q19} 490	320	^{Q19} 320
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.18	0.28	0.12	0.21
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.30
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.29
Nitrite (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	4.0	1.5	1.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	4.3	1.6	1.6
Total Nitrogen (as N)	0.2	mg/L	1.3	4.3	1.6	1.9
Heavy Metals						
Aluminium	0.05	mg/L	2.4	0.69	0.97	1.5
Aluminium (filtered)	0.05	mg/L	1.9	0.52	0.76	1.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.002	0.001	0.002
Chromium (filtered)	0.001	mg/L	0.002	0.001	< 0.001	0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.55	0.26	4.8	1.0
Iron (filtered)	0.05	mg/L	0.28	0.16	0.44	0.33
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW31 Water	MW32 Water	MW27 Water	MW26 Water
Sample Matrix			M16-Oc28347	M16-Oc28348	M16-Oc28349	M16-Oc28350
Eurofins mgt Sample No.			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.004	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.003	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	0.005	0.002
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	0.004	0.002
Zinc	0.005	mg/L	< 0.005	0.006	0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	11	4.0	6.9
Magnesium	0.5	mg/L	7.5	9.5	18	11
Potassium	0.5	mg/L	7.1	12	8.7	1.8
Sodium	0.5	mg/L	46	100	33	50

Client Sample ID			MW24 Water	MW25 Water	MW23 Water	MW29 Water
Sample Matrix			M16-Oc28351	M16-Oc28352	M16-Oc28353	M16-Oc28354
Eurofins mgt Sample No.			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	38	32	16	59
Chloride	1	mg/L	140	84	50	53
Conductivity (at 25°C)	1	uS/cm	630	450	400	330
pH	0.1	pH Units	4.2	4.9	6.6	4.1
Phosphate total (as P)	0.05	mg/L	< 0.05	0.19	0.10	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	17	11	16	18
Total Dissolved Solids	10	mg/L	380	280	250	^{Q15} 370
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	46	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	46	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	< 0.01	0.01	0.21
Nitrate & Nitrite (as N)	0.05	mg/L	2.4	8.8	4.2	< 0.05
Nitrate (as N)	0.02	mg/L	2.4	8.7	4.2	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.04
Organic Nitrogen (as N)	0.2	mg/L	1.2	1.6	1.1	2.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.6	1.1	2.2
Total Nitrogen (as N)	0.2	mg/L	3.7	10	5.3	2.2

Client Sample ID			MW24 Water	MW25 Water	MW23 Water	MW29 Water
Sample Matrix			M16-Oc28351	M16-Oc28352	M16-Oc28353	M16-Oc28354
Eurofins mgt Sample No.			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.4	1.1	0.35	1.8
Aluminium (filtered)	0.05	mg/L	1.1	0.70	0.13	1.3
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.11	0.11	< 0.05	0.27
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.13
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.009	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	0.002	0.005	0.003
Selenium (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Alkali Metals						
Calcium	0.5	mg/L	5.9	7.2	42	6.8
Magnesium	0.5	mg/L	17	13	4.9	14
Potassium	0.5	mg/L	3.5	3.7	5.7	2.2
Sodium	0.5	mg/L	86	56	31	39

Client Sample ID			MW30 Water	QC230 Water	QC231 Water
Sample Matrix			M16-Oc28355	M16-Oc28356	M16-Oc28357
Eurofins mgt Sample No.			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	14	-	-
Chloride	1	mg/L	31	-	-
Conductivity (at 25°C)	1	uS/cm	310	-	-
pH	0.1	pH Units	7.2	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as S)	5	mg/L	< 5	-	-
Total Dissolved Solids	10	mg/L	^{Q15} 230	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	63	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	63	-	-

Client Sample ID			MW30	QC230	QC231
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-Oc28355	M16-Oc28356	M16-Oc28357
Date Sampled			Oct 28, 2016	Oct 28, 2016	Oct 28, 2016
Test/Reference	LOR	Unit			
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.02	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	7.0	-	-
Nitrate (as N)	0.02	mg/L	6.9	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	1.5	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	-	-
Total Nitrogen (as N)	0.2	mg/L	8.5	-	-
Heavy Metals					
Aluminium	0.05	mg/L	0.38	-	-
Aluminium (filtered)	0.05	mg/L	0.21	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.06	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	-	-
Zinc (filtered)	0.005	mg/L	0.008	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	43	-	-
Magnesium	0.5	mg/L	4.1	-	-
Potassium	0.5	mg/L	1.1	-	-
Sodium	0.5	mg/L	24	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Oct 31, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Oct 31, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Oct 31, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Oct 31, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Oct 31, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Oct 31, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Oct 31, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Oct 31, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Oct 31, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 02, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 02, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 02, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 02, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 02, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 02, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 03, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 03, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 03, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 03, 2016	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Oct 31, 2016 8:00 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 521693	Due: Nov 8, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X												X	X	X			X	X				X		X
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X				X	X			X	X			X
Brisbane Laboratory - NATA Site # 20794																																								
External Laboratory																																								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																			
1	MW31	Oct 28, 2016		Water	M16-Oc28347	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	MW32	Oct 28, 2016		Water	M16-Oc28348	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MW27	Oct 28, 2016		Water	M16-Oc28349	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW26	Oct 28, 2016		Water	M16-Oc28350	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW24	Oct 28, 2016		Water	M16-Oc28351	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW25	Oct 28, 2016		Water	M16-Oc28352	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW23	Oct 28, 2016		Water	M16-Oc28353	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW29	Oct 28, 2016		Water	M16-Oc28354	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW30	Oct 28, 2016		Water	M16-Oc28355	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10	QC230	Oct 28, 2016		Water	M16-Oc28356			X		X		X			X		X		X		X		X		X		X								X					

Company Name: Coffey Environments Pty Ltd WA Address: Suite 2, 53 Burswood Road Burswood WA 6100 Project Name: NL_BASELINE GW_SW MONITORING Project ID: ENAUPERT04483AA	Order No.: Report #: 521693 Phone: 08 9355 7100 Fax: 08 9470 8601	Received: Oct 31, 2016 8:00 AM Due: Nov 8, 2016 Priority: 5 Day Contact Name: Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt		

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X												X	X	X					X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X				X	X				X	X					
Brisbane Laboratory - NATA Site # 20794																																											
External Laboratory																																											
11	QC231	Oct 28, 2016		Water	M16-Oc28357			X		X		X			X		X		X		X		X		X							X					X						
Test Counts						9	9	11	9	11	9	11	9	9	11	9	9	11	9	11	9	11	9	11	9	11	9	11	9	9	9	9	9	11	9	9	9	11	9	9	9	9	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	100			70-130	Pass	
Chloride	%	111			70-130	Pass	
Phosphate total (as P)	%	116			70-130	Pass	
Phosphorus reactive (as P)	%	120			70-130	Pass	
Sulphate (as S)	%	118			70-130	Pass	
Total Dissolved Solids	%	104			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	110			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	114			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	97			70-130	Pass	
Nitrate & Nitrite (as N)	%	99			70-130	Pass	
Nitrate (as N)	%	99			70-130	Pass	
Nitrite (as N)	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	86			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	99			70-130	Pass	
Aluminium (filtered)	%	92			70-130	Pass	
Arsenic	%	100			70-130	Pass	
Arsenic (filtered)	%	97			70-130	Pass	
Cadmium	%	103			70-130	Pass	
Cadmium (filtered)	%	102			70-130	Pass	
Chromium	%	100			70-130	Pass	
Chromium (filtered)	%	99			70-130	Pass	
Copper	%	100			70-130	Pass	
Copper (filtered)	%	100			70-130	Pass	
Iron	%	103			70-130	Pass	
Iron (filtered)	%	98			70-130	Pass	
Lead	%	102			70-130	Pass	
Lead (filtered)	%	99			70-130	Pass	
Manganese	%	95			70-130	Pass	
Manganese (filtered)	%	93			70-130	Pass	
Mercury	%	88			70-130	Pass	
Mercury (filtered)	%	96			70-130	Pass	
Nickel	%	92			70-130	Pass	
Nickel (filtered)	%	93			70-130	Pass	
Selenium	%	95			70-130	Pass	
Selenium (filtered)	%	86			70-130	Pass	
Zinc	%	94			70-130	Pass	
Zinc (filtered)	%	96			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	111			70-130	Pass	
Magnesium	%	115			70-130	Pass	
Potassium	%	104			70-130	Pass	
Sodium	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	P16-No01450	NCP	%	98		70-130	Pass	
Phosphorus reactive (as P)	S16-Oc27489	NCP	%	103		70-130	Pass	
Sulphate (as S)	M16-Oc28458	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-Oc28145	NCP	%	91		70-130	Pass	
Carbonate Alkalinity (as CaCO3)	M16-Oc26514	NCP	%	129		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-Oc28145	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-Oc26971	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Copper (filtered)	S16-No02347	NCP	%	85		70-130	Pass	
Lead (filtered)	S16-No02347	NCP	%	88		70-130	Pass	
Selenium (filtered)	S16-No02347	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-Oc28348	CP	%	92		70-130	Pass	
Aluminium (filtered)	M16-Oc28348	CP	%	103		70-130	Pass	
Arsenic	M16-Oc28348	CP	%	95		70-130	Pass	
Arsenic (filtered)	M16-Oc28348	CP	%	104		70-130	Pass	
Cadmium	M16-Oc28348	CP	%	96		70-130	Pass	
Cadmium (filtered)	M16-Oc28348	CP	%	105		70-130	Pass	
Chromium	M16-Oc28348	CP	%	95		70-130	Pass	
Chromium (filtered)	M16-Oc28348	CP	%	100		70-130	Pass	
Copper	M16-Oc28348	CP	%	90		70-130	Pass	
Iron	M16-Oc28348	CP	%	84		70-130	Pass	
Iron (filtered)	M16-Oc28348	CP	%	125		70-130	Pass	
Lead	M16-Oc28348	CP	%	91		70-130	Pass	
Manganese	M16-Oc28348	CP	%	90		70-130	Pass	
Manganese (filtered)	M16-Oc28348	CP	%	94		70-130	Pass	
Mercury	M16-Oc28348	CP	%	89		70-130	Pass	
Mercury (filtered)	M16-Oc28348	CP	%	106		70-130	Pass	
Nickel	M16-Oc28348	CP	%	86		70-130	Pass	
Nickel (filtered)	M16-Oc28348	CP	%	88		70-130	Pass	
Selenium	M16-Oc28348	CP	%	90		70-130	Pass	
Zinc	M16-Oc28348	CP	%	85		70-130	Pass	
Zinc (filtered)	M16-Oc28348	CP	%	102		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-Oc28352	CP	%	103		70-130	Pass	
Cadmium	M16-Oc28352	CP	%	108		70-130	Pass	
Chromium	M16-Oc28352	CP	%	103		70-130	Pass	
Copper	M16-Oc28352	CP	%	98		70-130	Pass	
Iron	M16-Oc28352	CP	%	91		70-130	Pass	
Lead	M16-Oc28352	CP	%	102		70-130	Pass	
Manganese	M16-Oc28352	CP	%	98		70-130	Pass	
Mercury	M16-Oc28352	CP	%	90		70-130	Pass	
Nickel	M16-Oc28352	CP	%	94		70-130	Pass	
Selenium	M16-Oc28352	CP	%	100		70-130	Pass	
Zinc	M16-Oc28352	CP	%	94		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-Oc28352	CP	%	108			70-130	Pass	
Magnesium	M16-Oc28352	CP	%	117			70-130	Pass	
Potassium	M16-Oc28352	CP	%	106			70-130	Pass	
Sodium	M16-Oc28352	CP	%	81			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-Oc28353	CP	%	100			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-Oc28354	CP	%	97			70-130	Pass	
Nitrate & Nitrite (as N)	M16-Oc28354	CP	%	95			70-130	Pass	
Nitrate (as N)	M16-Oc28354	CP	%	95			70-130	Pass	
Nitrite (as N)	M16-Oc28354	CP	%	94			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-Oc28347	CP	uS/cm	340	350	4.0	30%	Pass	
pH	M16-Oc28347	CP	pH Units	4.8	4.7	pass	30%	Pass	
Phosphate total (as P)	P16-No00416	NCP	mg/L	0.52	0.52	<1	30%	Pass	
Phosphorus reactive (as P)	M16-Oc26406	NCP	mg/L	0.29	0.35	1.6	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc28347	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-Oc28347	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc28347	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-Oc28347	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-Oc28347	CP	mg/L	2.4	2.6	9.0	30%	Pass	
Aluminium (filtered)	M16-Oc28347	CP	mg/L	1.9	2.0	3.0	30%	Pass	
Arsenic	M16-Oc28347	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-Oc28347	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S16-No02346	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-Oc28347	CP	mg/L	0.003	0.003	7.0	30%	Pass	
Chromium (filtered)	M16-Oc28347	CP	mg/L	0.002	0.002	6.0	30%	Pass	
Copper	M16-Oc28347	CP	mg/L	0.002	0.002	16	30%	Pass	
Copper (filtered)	M16-Oc28347	CP	mg/L	0.001	0.001	7.0	30%	Pass	
Iron	M16-Oc28347	CP	mg/L	0.55	0.60	9.0	30%	Pass	
Iron (filtered)	M16-Oc28347	CP	mg/L	0.28	0.31	11	30%	Pass	
Lead	M16-Oc28347	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Oc28347	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-Oc28347	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	M16-Oc28347	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	S16-Oc25036	NCP	mg/L	0.0051	0.0050	2.0	30%	Pass	
Mercury (filtered)	M16-Oc26466	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-Oc28347	CP	mg/L	0.002	0.003	9.0	30%	Pass	
Nickel (filtered)	M16-Oc28347	CP	mg/L	0.002	0.002	5.0	30%	Pass	
Selenium	S16-Oc25036	NCP	mg/L	0.088	0.093	5.0	30%	Pass	
Selenium (filtered)	M16-Oc28347	CP	mg/L	0.002	0.001	18	30%	Pass	
Zinc	M16-Oc28347	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	S16-No02346	NCP	mg/L	0.005	0.005	3.0	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Oc28347	CP	mg/L	13	14	7.0	30%	Pass
Magnesium	M16-Oc28347	CP	mg/L	7.5	8.0	7.0	30%	Pass
Potassium	M16-Oc28347	CP	mg/L	7.1	7.7	8.0	30%	Pass
Sodium	M16-Oc28347	CP	mg/L	46	49	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-Oc28349	CP	mg/L	320	320	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-Oc28351	CP	mg/L	38	34	12	30%	Pass
Conductivity (at 25°C)	M16-Oc28351	CP	uS/cm	630	620	2.0	30%	Pass
pH	M16-Oc28351	CP	pH Units	4.2	4.2	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-Oc28351	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-Oc28351	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-Oc28351	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-Oc28351	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-Oc28351	CP	mg/L	1.4	1.5	2.0	30%	Pass
Cadmium	M16-Oc28351	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-Oc28351	CP	mg/L	0.001	0.002	6.0	30%	Pass
Copper	M16-Oc28351	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-Oc28351	CP	mg/L	0.11	0.12	8.0	30%	Pass
Lead	M16-Oc28351	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel	M16-Oc28351	CP	mg/L	0.001	0.001	8.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-Oc28351	CP	mg/L	5.9	5.6	6.0	30%	Pass
Magnesium	M16-Oc28351	CP	mg/L	17	16	6.0	30%	Pass
Potassium	M16-Oc28351	CP	mg/L	3.5	3.4	3.0	30%	Pass
Sodium	M16-Oc28351	CP	mg/L	86	85	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-Oc28352	CP	mg/L	84	84	<1	30%	Pass
Sulphate (as S)	M16-Oc28352	CP	mg/L	11	12	1.1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-Oc28354	CP	mg/L	0.21	0.22	6.0	30%	Pass
Nitrate & Nitrite (as N)	M16-Oc28354	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-Oc28354	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-Oc28354	CP	mg/L	0.04	0.04	5.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 2, 2016 8:16 AM**
Eurofins | mgt reference: **521966**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Richelle Bunbury

Report 521966-W
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Nov 02, 2016

Client Sample ID			MW2 Water	MW3 Water	MW55 Water	SWL1_1 Water
Sample Matrix			M16-No01104	M16-No01105	M16-No01106	M16-No01107
Eurofins mgt Sample No.			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	-
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	-
Toluene	0.001	mg/L	-	-	< 0.001	-
Ethylbenzene	0.001	mg/L	-	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	-
o-Xylene	0.001	mg/L	-	-	< 0.001	-
Xylenes - Total	0.003	mg/L	-	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	-	95	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Acidity and Inorganic Compounds						
Acidity (as CaCO3)	10	mg/L	< 10	30	38	< 10
Chloride	1	mg/L	47	23	65	77
Conductivity (at 25°C)	1	uS/cm	440	250	710	420
pH	0.1	pH Units	7.2	6.3	6.5	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	47	12
Total Dissolved Solids	10	mg/L	^{Q19} 330	^{Q19} 220	450	220
Turbidity	1	NTU	-	-	-	2.3

Client Sample ID			MW2 Water	MW3 Water	MW55 Water	SWL1_1 Water
Sample Matrix			M16-No01104	M16-No01105	M16-No01106	M16-No01107
Eurofins mgt Sample No.			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	140	69	120	47
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	140	69	120	47
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.15	0.10	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	0.92	0.97	2.9	0.14
Nitrate (as N)	0.02	mg/L	0.92	0.95	2.8	0.13
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	1.5	0.9	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	1.6	1.0	0.8
Total Nitrogen (as N)	0.2	mg/L	1.6	2.6	3.9	0.9
Heavy Metals						
Aluminium	0.05	mg/L	0.32	0.92	0.23	0.07
Aluminium (filtered)	0.05	mg/L	0.12	0.81	0.15	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00008	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.09	< 0.05	0.14	0.18
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.06	0.08
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.003	0.001	0.001	< 0.001
Zinc	0.005	mg/L	0.017	0.006	< 0.005	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.005
Alkali Metals						
Calcium	0.5	mg/L	59	30	73	18
Magnesium	0.5	mg/L	2.3	4.9	13	10
Potassium	0.5	mg/L	< 0.5	1.6	20	4.9
Sodium	0.5	mg/L	24	11	71	48
Pathogens						
E.coli	1	MPN/100mL	-	-	-	5
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	290

Client Sample ID			SWL1_2	SWL1_3	SWL2_1	SWL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No01108	M16-No01109	M16-No01110	M16-No01111
Date Sampled			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	78	69	63	62
Conductivity (at 25°C)	1	uS/cm	410	360	380	390
pH	0.1	pH Units	7.1	6.9	7.6	7.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.41	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	8.7	11	11
Total Dissolved Solids	10	mg/L	300	210	220	220
Turbidity	1	NTU	1.5	< 1	1.2	2.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	53	42	61	62
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	53	42	61	62
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.01	0.03	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	< 0.02	0.03	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.5	0.5	0.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.6	0.6	0.6
Total Nitrogen (as N)	0.2	mg/L	0.7	0.6	0.6	0.6
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	0.17	0.17
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.15	0.16
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.10	0.18	0.12	0.11
Iron (filtered)	0.05	mg/L	< 0.05	0.07	0.08	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.011	0.005	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.009	< 0.005	< 0.005

Client Sample ID			SWL1_2	SWL1_3	SWL2_1	SWL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No01108	M16-No01109	M16-No01110	M16-No01111
Date Sampled			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	18	17	21	21
Magnesium	0.5	mg/L	9.7	8.2	10	10
Potassium	0.5	mg/L	4.8	4.4	3.6	3.7
Sodium	0.5	mg/L	45	41	40	40
Pathogens						
E.coli	1	MPN/100mL	46	10	<1	2
Thermotolerant Coliforms	1	MPN/100mL	52	21	1	2

Client Sample ID			SWL2_3	SWL3_1	SWL3_2	SWL3_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No01112	M16-No01113	M16-No01114	M16-No01115
Date Sampled			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	64	59	60	59
Conductivity (at 25°C)	1	uS/cm	390	360	350	350
pH	0.1	pH Units	7.7	7.8	7.8	7.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	11	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	210	210	200	220
Turbidity	1	NTU	1.1	2.2	2.0	2.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	60	66	67	67
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	60	66	67	67
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.02	0.03	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.25	0.25	0.25
Nitrate (as N)	0.02	mg/L	0.03	0.25	0.25	0.23
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.6	0.7	0.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.7	0.7	0.8
Total Nitrogen (as N)	0.2	mg/L	0.6	0.9	1.0	1.1
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.27	0.27	0.27
Aluminium (filtered)	0.05	mg/L	0.16	0.24	0.25	0.25
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.12	0.13	0.13	0.14

Client Sample ID			SWL2_3	SWL3_1	SWL3_2	SWL3_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No01112	M16-No01113	M16-No01114	M16-No01115
Date Sampled			Nov 01, 2016	Nov 01, 2016	Nov 01, 2016	Nov 01, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.08	0.10	0.10	0.11
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	21	21	20	20
Magnesium	0.5	mg/L	11	8.5	8.5	8.4
Potassium	0.5	mg/L	3.7	1.9	1.9	1.8
Sodium	0.5	mg/L	41	39	39	39
Pathogens						
E.coli	1	MPN/100mL	1	14	10	5
Thermotolerant Coliforms	1	MPN/100mL	9	14	10	11

Client Sample ID			QC236	QC237
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-No01116	M16-No01117
Date Sampled			Nov 01, 2016	Nov 01, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Nov 04, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 02, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 02, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Nov 04, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 02, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 02, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 02, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 02, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 02, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 02, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 02, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 02, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 04, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 02, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Nov 02, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 02, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Nov 02, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Nov 02, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 02, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 02, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 08, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 08, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 08, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 08, 2016	180 Day

Description

E.coli

- Method: LTM-MIC-6621

Thermotolerant Coliforms

- Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN

Testing Site

Melbourne

Melbourne

Extracted

Nov 02, 2016

Nov 02, 2016

Holding Time

24 Hour

24 Hour

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	88			70-130	Pass	
TRH C10-C14	%	125			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	94			70-130	Pass	
o-Xylene	%	95			70-130	Pass	
Xylenes - Total	%	94			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	96			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	117			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	100			70-130	Pass	
Chloride	%	120			70-130	Pass	
Phosphate total (as P)	%	116			70-130	Pass	
Phosphorus reactive (as P)	%	100			70-130	Pass	
Sulphate (as S)	%	121			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	107			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	107			70-130	Pass	

Test		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
LCS - % Recovery									
Nitrogens (speciated)									
Ammonia (as N)		%	95			70-130	Pass		
Nitrate & Nitrite (as N)		%	99			70-130	Pass		
Nitrate (as N)		%	99			70-130	Pass		
Nitrite (as N)		%	97			70-130	Pass		
Total Kjeldahl Nitrogen (as N)		%	98			70-130	Pass		
LCS - % Recovery									
Heavy Metals									
Aluminium		%	102			70-130	Pass		
Aluminium (filtered)		%	96			70-130	Pass		
Arsenic		%	94			70-130	Pass		
Arsenic (filtered)		%	98			70-130	Pass		
Cadmium		%	94			70-130	Pass		
Cadmium (filtered)		%	103			70-130	Pass		
Chromium		%	103			70-130	Pass		
Chromium (filtered)		%	96			70-130	Pass		
Copper		%	103			70-130	Pass		
Copper (filtered)		%	96			70-130	Pass		
Iron		%	74			70-130	Pass		
Iron (filtered)		%	95			70-130	Pass		
Lead		%	103			70-130	Pass		
Lead (filtered)		%	103			70-130	Pass		
Manganese		%	102			70-130	Pass		
Manganese (filtered)		%	97			70-130	Pass		
Mercury		%	122			70-130	Pass		
Mercury (filtered)		%	99			70-130	Pass		
Nickel		%	104			70-130	Pass		
Nickel (filtered)		%	95			70-130	Pass		
Selenium		%	97			70-130	Pass		
Selenium (filtered)		%	98			70-130	Pass		
Zinc		%	93			70-130	Pass		
Zinc (filtered)		%	98			70-130	Pass		
LCS - % Recovery									
Alkali Metals									
Calcium		%	113			70-130	Pass		
Magnesium		%	118			70-130	Pass		
Potassium		%	107			70-130	Pass		
Sodium		%	108			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chloride	M16-Oc29167	NCP	%	123			70-130	Pass	
Spike - % Recovery									
				Result 1					
Alkalinity (speciated)									
Total Alkalinity (as CaCO3)	B16-Oc29030	NCP	%	115			70-130	Pass	
Spike - % Recovery									
				Result 1					
Nitrogens (speciated)									
Ammonia (as N)	M16-No01104	CP	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	M16-No01104	CP	%	93			70-130	Pass	
Nitrate (as N)	M16-No01104	CP	%	93			70-130	Pass	
Nitrite (as N)	M16-No01104	CP	%	94			70-130	Pass	
Spike - % Recovery									
				Result 1					
Alkali Metals									

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Calcium	M16-Oc28352	NCP	%	108		70-130	Pass	
Magnesium	M16-Oc28352	NCP	%	117		70-130	Pass	
Potassium	M16-Oc28352	NCP	%	106		70-130	Pass	
Sodium	M16-Oc28352	NCP	%	81		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-No01105	CP	%	100		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-No01105	CP	%	121		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	M16-No03573	NCP	%	96		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-No03573	NCP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-No01106	CP	%	100		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-No01107	CP	%	93		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-No01109	CP	%	98		70-130	Pass	
Arsenic (filtered)	M16-No01109	CP	%	103		70-130	Pass	
Cadmium (filtered)	M16-No01109	CP	%	107		70-130	Pass	
Chromium (filtered)	M16-No01109	CP	%	95		70-130	Pass	
Copper (filtered)	M16-No01109	CP	%	91		70-130	Pass	
Iron (filtered)	M16-No01109	CP	%	85		70-130	Pass	
Lead (filtered)	M16-No01109	CP	%	99		70-130	Pass	
Manganese (filtered)	M16-No01109	CP	%	96		70-130	Pass	
Mercury (filtered)	M16-No01109	CP	%	82		70-130	Pass	
Nickel (filtered)	M16-No01109	CP	%	91		70-130	Pass	
Selenium (filtered)	M16-No01109	CP	%	91		70-130	Pass	
Zinc (filtered)	M16-No01109	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-No01112	CP	%	92		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No01113	CP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No01113	CP	%	95		70-130	Pass	
Nitrate (as N)	M16-No01113	CP	%	95		70-130	Pass	
Nitrite (as N)	M16-No01113	CP	%	94		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No01114	CP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No01114	CP	%	96		70-130	Pass	
Nitrate (as N)	M16-No01114	CP	%	96		70-130	Pass	
Nitrite (as N)	M16-No01114	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-No01115	CP	%	113		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
pH	M16-No01104	CP	pH Units	7.2	7.3	pass	30%	Pass	
Phosphate total (as P)	M16-No01104	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-No01104	CP	mg/L	140	140	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No01104	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No01104	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No01104	CP	mg/L	140	140	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-No01104	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-No01104	CP	mg/L	0.92	0.91	<1	30%	Pass	
Nitrate (as N)	M16-No01104	CP	mg/L	0.92	0.91	<1	30%	Pass	
Nitrite (as N)	M16-No01104	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-No03534	NCP	mg/L	0.5	0.5	7.5	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	S16-No02555	NCP	mg/L	0.06	0.06	3.0	30%	Pass	
Arsenic	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium	S16-No02555	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Iron	S16-No02555	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	S16-No02555	NCP	mg/L	0.16	0.16	3.0	30%	Pass	
Mercury	S16-No02555	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	M16-No01382	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S16-No02555	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Selenium	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S16-No02555	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Sodium	M16-Oc28351	NCP	mg/L	86	85	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-No01105	CP	mg/L	23	23	<1	30%	Pass	
Sulphate (as S)	M16-No01105	CP	mg/L	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium (filtered)	M16-No01105	CP	mg/L	0.81	0.83	1.0	30%	Pass	
Arsenic (filtered)	M16-No01105	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-No01105	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	M16-No01105	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-No01105	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-No01105	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-No01105	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M16-No01105	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	M16-No01105	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-No01105	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions									
				Result 1	Result 2	RPD			
TRH C10-C14	M16-No03624	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-No03624	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-No03624	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-No03624	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-No03624	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-No03624	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-No01106	CP	mg/L	38	30	22	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-No01107	CP	mg/L	< 10	< 10	<1	30%	Pass
Turbidity	M16-No01107	CP	NTU	2.3	2.3	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No01109	CP	uS/cm	360	360	2.0	30%	Pass
pH	M16-No01109	CP	pH Units	6.9	6.9	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-No01109	CP	mg/L	42	43	4.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-No01109	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-No01109	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-No01109	CP	mg/L	42	43	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-No01111	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-No01112	CP	mg/L	210	230	6.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-No01112	CP	mg/L	21	21	4.0	30%	Pass
Magnesium	M16-No01112	CP	mg/L	11	10	2.0	30%	Pass
Potassium	M16-No01112	CP	mg/L	3.7	3.6	5.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No01113	CP	mg/L	0.02	0.02	6.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No01113	CP	mg/L	0.25	0.25	3.0	30%	Pass
Nitrate (as N)	M16-No01113	CP	mg/L	0.25	0.25	3.0	30%	Pass
Nitrite (as N)	M16-No01113	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No01114	CP	uS/cm	350	350	<1	30%	Pass
pH	M16-No01114	CP	pH Units	7.8	7.8	pass	30%	Pass
Phosphate total (as P)	M16-No01114	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-No01114	CP	mg/L	67	67	<1	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-No01114	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-No01114	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-No01114	CP	mg/L	67	67	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No01114	CP	mg/L	0.03	0.03	9.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No01114	CP	mg/L	0.25	0.25	<1	30%	Pass
Nitrate (as N)	M16-No01114	CP	mg/L	0.25	0.25	<1	30%	Pass
Nitrite (as N)	M16-No01114	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 2, 2016 8:16 AM**
Eurofins | mgt reference: **522016**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **522016-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Nov 02, 2016

Client Sample ID			MW4 Water	MW10 Water	MW11 Water	MW12 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-No01359	M16-No01373	M16-No01374	M16-No01375
Date Sampled			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	28	17	64	34
Chloride	1	mg/L	21	22	140	52
Conductivity (at 25°C)	1	uS/cm	210	250	770	220
pH	0.1	pH Units	6.5	6.6	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	< 5	< 5	51	12
Total Dissolved Solids	10	mg/L	120	160	400	140
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	60	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	54	60	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.05	0.01
Nitrate & Nitrite (as N)	0.05	mg/L	3.7	4.0	0.68	0.37
Nitrate (as N)	0.02	mg/L	3.7	4.0	0.67	0.37
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.8	2.5	0.8	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	2.5	0.8	0.4
Total Nitrogen (as N)	0.2	mg/L	5.5	6.5	1.5	0.8
Heavy Metals						
Aluminium	0.05	mg/L	0.11	0.44	6.7	2.6
Aluminium (filtered)	0.05	mg/L	0.11	0.26	7.0	2.7
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.46	0.60	0.46
Iron (filtered)	0.05	mg/L	< 0.05	0.22	0.33	0.22
Lead	0.001	mg/L	< 0.001	0.001	0.004	< 0.001

Client Sample ID			MW4 Water	MW10 Water	MW11 Water	MW12 Water
Sample Matrix			M16-No01359	M16-No01373	M16-No01374	M16-No01375
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.004	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.004	0.003
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Zinc	0.005	mg/L	0.006	0.007	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	33	39	1.1	1.8
Magnesium	0.5	mg/L	2.4	3.8	27	5.8
Potassium	0.5	mg/L	< 0.5	0.9	< 0.5	< 0.5
Sodium	0.5	mg/L	8.0	9.6	73	26

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			M16-No01376	M16-No01377	M16-No01378	M16-No01379
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	72	21	24	45
Chloride	1	mg/L	59	36	44	100
Conductivity (at 25°C)	1	uS/cm	250	180	230	530
pH	0.1	pH Units	4.1	4.4	4.0	4.8
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	12	< 5	18	23
Total Dissolved Solids	10	mg/L	160	120	150	310
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.05	0.01	0.16	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.90	2.4	0.15	3.9
Nitrate (as N)	0.02	mg/L	0.89	2.4	0.15	3.9
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	6.3	0.7	0.6	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.3	0.7	0.7	1.6
Total Nitrogen (as N)	0.2	mg/L	7.2	3.1	0.9	5.5

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			M16-No01376	M16-No01377	M16-No01378	M16-No01379
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	3.4	0.84	0.40	2.6
Aluminium (filtered)	0.05	mg/L	3.0	0.60	0.36	2.2
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.001	0.002
Chromium (filtered)	0.001	mg/L	0.001	0.002	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.49	0.22	0.38	0.21
Iron (filtered)	0.05	mg/L	0.19	0.15	0.16	0.09
Lead	0.001	mg/L	0.002	0.001	0.001	0.006
Lead (filtered)	0.001	mg/L	0.002	0.001	< 0.001	0.005
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.014	< 0.005	< 0.005	0.005
Zinc (filtered)	0.005	mg/L	0.013	< 0.005	< 0.005	0.006
Alkali Metals						
Calcium	0.5	mg/L	3.5	7.5	5.3	34
Magnesium	0.5	mg/L	6.0	5.3	8.7	9.0
Potassium	0.5	mg/L	0.9	< 0.5	1.6	1.2
Sodium	0.5	mg/L	27	16	23	42

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M16-No01380	M16-No01381	M16-No01382	M16-No01383
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	40	28	250	63
Chloride	1	mg/L	31	66	120	64
Conductivity (at 25°C)	1	uS/cm	180	270	500	280
pH	0.1	pH Units	4.1	4.2	3.5	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.73	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	13	10	23	15
Total Dissolved Solids	10	mg/L	120	180	330	190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M16-No01380	M16-No01381	M16-No01382	M16-No01383
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.07	0.05	0.08
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.2	0.18	1.4
Nitrate (as N)	0.02	mg/L	< 0.02	2.2	0.16	1.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.9	4.7	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	1.0	4.8	0.6
Total Nitrogen (as N)	0.2	mg/L	0.6	3.2	5.0	2.0
Heavy Metals						
Aluminium	0.05	mg/L	1.3	1.2	18	7.3
Aluminium (filtered)	0.05	mg/L	1.4	1.1	13	7.5
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	0.009	0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.004	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.64	0.33	0.09	0.40
Iron (filtered)	0.05	mg/L	0.36	0.12	< 0.05	0.28
Lead	0.001	mg/L	0.002	< 0.001	0.006	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.007	0.006
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.006	0.006
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Alkali Metals						
Calcium	0.5	mg/L	3.8	13	1.3	< 0.5
Magnesium	0.5	mg/L	3.6	4.3	3.4	3.3
Potassium	0.5	mg/L	0.9	1.0	< 0.5	0.5
Sodium	0.5	mg/L	22	30	64	35

Client Sample ID			MW21 Water	MW22 Water	QC233 Water	QC234 Water
Sample Matrix			M16-No01384	M16-No01385	M16-No01386	M16-No01387
Eurofins mgt Sample No.			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	82	120	-	-
Chloride	1	mg/L	60	89	-	-
Conductivity (at 25°C)	1	uS/cm	300	590	-	-
pH	0.1	pH Units	4.1	3.6	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as S)	5	mg/L	18	53	-	-
Total Dissolved Solids	10	mg/L	190	370	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.19	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	4.4	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	4.3	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	0.08	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.7	0.4	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.6	-	-
Total Nitrogen (as N)	0.2	mg/L	5.2	0.6	-	-
Heavy Metals						
Aluminium	0.05	mg/L	7.4	7.1	-	-
Aluminium (filtered)	0.05	mg/L	7.6	7.7	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00006	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00007	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.003	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.6	3.2	-	-
Iron (filtered)	0.05	mg/L	3.3	2.5	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.006	-	-
Lead (filtered)	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.017	-	-
Nickel (filtered)	0.001	mg/L	0.004	0.018	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW21	MW22	QC233	QC234
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No01384	M16-No01385	M16-No01386	M16-No01387
Date Sampled			Oct 31, 2016	Oct 31, 2016	Oct 31, 2016	Oct 31, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	2.5	23	-	-
Magnesium	0.5	mg/L	3.6	7.4	-	-
Potassium	0.5	mg/L	2.4	0.7	-	-
Sodium	0.5	mg/L	28	55	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 02, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 02, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 02, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 02, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 02, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 02, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 02, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 02, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 02, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 03, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 03, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 03, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 03, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 03, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 03, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 08, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 08, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 08, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 08, 2016	180 Day

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Acidity (as CaCO ₃)	mg/L	< 10		10	Pass	
Chloride	mg/L	< 1		1	Pass	
Phosphate total (as P)	mg/L	< 0.05		0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05		0.05	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
Method Blank						
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10		10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20		20	Pass	
Method Blank						
Nitrogens (speciated)						
Ammonia (as N)	mg/L	< 0.01		0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Nitrate (as N)	mg/L	< 0.02		0.02	Pass	
Nitrite (as N)	mg/L	< 0.02		0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
Method Blank						
Heavy Metals						
Aluminium	mg/L	< 0.05		0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05		0.05	Pass	
Arsenic	mg/L	< 0.001		0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium	mg/L	< 0.00005		0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005		0.00005	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Copper (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Lead (filtered)	mg/L	< 0.001		0.001	Pass	
Manganese	mg/L	< 0.005		0.005	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.005		0.005	Pass	
Zinc (filtered)	mg/L	< 0.005		0.005	Pass	
Method Blank						
Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	96			70-130	Pass	
Chloride	%	122			70-130	Pass	
Phosphate total (as P)	%	109			70-130	Pass	
Phosphorus reactive (as P)	%	100			70-130	Pass	
Sulphate (as S)	%	121			70-130	Pass	
Total Dissolved Solids	%	91			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	97			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	109			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	96			70-130	Pass	
Nitrate & Nitrite (as N)	%	100			70-130	Pass	
Nitrate (as N)	%	100			70-130	Pass	
Nitrite (as N)	%	95			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	89			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	80			70-130	Pass	
Aluminium (filtered)	%	98			70-130	Pass	
Arsenic	%	87			70-130	Pass	
Arsenic (filtered)	%	93			70-130	Pass	
Cadmium	%	93			70-130	Pass	
Cadmium (filtered)	%	100			70-130	Pass	
Chromium	%	84			70-130	Pass	
Chromium (filtered)	%	98			70-130	Pass	
Copper	%	80			70-130	Pass	
Copper (filtered)	%	95			70-130	Pass	
Iron	%	74			70-130	Pass	
Iron (filtered)	%	104			70-130	Pass	
Lead	%	89			70-130	Pass	
Lead (filtered)	%	106			70-130	Pass	
Manganese	%	83			70-130	Pass	
Manganese (filtered)	%	99			70-130	Pass	
Mercury	%	92			70-130	Pass	
Mercury (filtered)	%	98			70-130	Pass	
Nickel	%	81			70-130	Pass	
Nickel (filtered)	%	96			70-130	Pass	
Selenium	%	90			70-130	Pass	
Selenium (filtered)	%	97			70-130	Pass	
Zinc	%	84			70-130	Pass	
Zinc (filtered)	%	90			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	101			70-130	Pass	
Magnesium	%	101			70-130	Pass	
Potassium	%	91			70-130	Pass	
Sodium	%	88			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-Oc29167	NCP	%	123		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-No01105	NCP	%	121		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No01115	NCP	%	113		70-130	Pass	
Total Alkalinity (as CaCO ₃)	B16-Oc29030	NCP	%	115		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Ammonia (as N)	M16-No01113	NCP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No01113	NCP	%	95		70-130	Pass	
Nitrate (as N)	M16-No01113	NCP	%	95		70-130	Pass	
Nitrite (as N)	M16-No01114	NCP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Aluminium	S16-No05748	NCP	%	90		70-130	Pass	
Aluminium (filtered)	S16-No04679	NCP	%	103		70-130	Pass	
Arsenic	S16-No05748	NCP	%	96		70-130	Pass	
Arsenic (filtered)	S16-No04679	NCP	%	121		70-130	Pass	
Cadmium	S16-No05748	NCP	%	101		70-130	Pass	
Cadmium (filtered)	S16-No04679	NCP	%	113		70-130	Pass	
Chromium	S16-No05748	NCP	%	91		70-130	Pass	
Chromium (filtered)	S16-No04679	NCP	%	103		70-130	Pass	
Copper	S16-No05748	NCP	%	89		70-130	Pass	
Copper (filtered)	S16-No04679	NCP	%	96		70-130	Pass	
Iron	S16-No05748	NCP	%	84		70-130	Pass	
Iron (filtered)	S16-No04679	NCP	%	98		70-130	Pass	
Lead	S16-No05748	NCP	%	96		70-130	Pass	
Lead (filtered)	S16-No04679	NCP	%	103		70-130	Pass	
Manganese	S16-No05748	NCP	%	91		70-130	Pass	
Manganese (filtered)	S16-No04679	NCP	%	105		70-130	Pass	
Mercury	S16-No05748	NCP	%	98		70-130	Pass	
Mercury (filtered)	S16-No04679	NCP	%	106		70-130	Pass	
Nickel	S16-No05748	NCP	%	91		70-130	Pass	
Nickel (filtered)	S16-No04679	NCP	%	98		70-130	Pass	
Selenium	S16-No05748	NCP	%	97		70-130	Pass	
Selenium (filtered)	S16-No04679	NCP	%	115		70-130	Pass	
Zinc	S16-No05748	NCP	%	92		70-130	Pass	
Zinc (filtered)	S16-No04679	NCP	%	105		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	S16-No03371	NCP	%	99		70-130	Pass	
Magnesium	S16-No03371	NCP	%	92		70-130	Pass	
Potassium	S16-No03371	NCP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-No01375	CP	%	102		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-No01378	CP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-No01380	CP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-No01382	CP	%	73			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-No01359	CP	mg/L	28	26	7.0	30%	Pass	
Conductivity (at 25°C)	M16-No01202	NCP	uS/cm	310	300	10	30%	Pass	
pH	M16-No01202	NCP	pH Units	7.3	7.3	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-No01202	NCP	mg/L	130	120	7.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No01202	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No01202	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No01202	NCP	mg/L	130	120	7.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-No01114	NCP	mg/L	0.03	0.03	9.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-No01114	NCP	mg/L	0.25	0.25	<1	30%	Pass	
Nitrate (as N)	M16-No01114	NCP	mg/L	0.25	0.25	<1	30%	Pass	
Nitrite (as N)	M16-No01114	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P16-No01461	NCP	mg/L	0.4	0.3	22	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	S16-No02555	NCP	mg/L	0.06	0.06	3.0	30%	Pass	
Aluminium (filtered)	M16-No01359	CP	mg/L	0.11	0.11	4.0	30%	Pass	
Arsenic	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-No05747	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	M16-No01359	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	S16-No02555	NCP	mg/L	0.003	0.003	3.0	30%	Pass	
Chromium (filtered)	M16-No01359	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S16-No05747	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-No01359	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	S16-No02555	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	M16-No01359	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-No01359	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	S16-No02555	NCP	mg/L	0.16	0.16	3.0	30%	Pass	
Manganese (filtered)	M16-No01359	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	S16-No02555	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S16-No02555	NCP	mg/L	0.005	0.005	5.0	30%	Pass	
Nickel (filtered)	M16-No01359	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S16-No02555	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	S16-No04678	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S16-No02555	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M16-No01359	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S16-No02555	NCP	mg/L	31	31	<1	30%	Pass	
Magnesium	S16-No02555	NCP	mg/L	8.0	8.1	1.0	30%	Pass	
Potassium	S16-No02555	NCP	mg/L	2.4	2.4	3.0	30%	Pass	
Sodium	S16-No03370	NCP	mg/L	220	240	10	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-No01374	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-No01377	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-No01379	CP	mg/L	100	100	<1	30%	Pass
Sulphate (as S)	M16-No01379	CP	mg/L	23	23	1.6	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-No01382	CP	mg/L	330	320	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-No01382	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-No01382	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-No01382	CP	mg/L	0.004	0.004	4.0	30%	Pass
Copper (filtered)	M16-No01382	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-No01382	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-No01382	CP	mg/L	0.002	0.002	4.0	30%	Pass
Manganese (filtered)	M16-No01382	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-No01382	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-No01382	CP	mg/L	0.006	0.007	4.0	30%	Pass
Zinc (filtered)	M16-No01382	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No01385	CP	mg/L	120	110	4.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1610059**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 24-Oct-2016 17:30
Date Analysis Commenced : 24-Oct-2016
Issue Date : 31-Oct-2016 13:26



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- MF = membrane filtration
- CFU = colony forming unit
- MW006: estimate (~) is reported where the growth of presumptive bacteria on the filtered membrane is counted <10 cfu and/or >100 cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC213	QC215	----	----	----
Client sampling date / time				[24-Oct-2016]	[24-Oct-2016]	----	----	----
Compound	CAS Number	LOR	Unit	EP1610059-001	EP1610059-002	-----	-----	-----
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.29	6.87	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	8790	3890	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	5940	2370	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	----	0.6	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	26	19	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	26	19	----	----	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	66	11	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	159	148	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2640	1110	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	30	17	----	----	----
Magnesium	7439-95-4	1	mg/L	187	88	----	----	----
Sodium	7440-23-5	1	mg/L	1360	636	----	----	----
Potassium	7440-09-7	1	mg/L	51	13	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	0.0003	<0.0001	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Aluminium	7429-90-5	5	µg/L	10	36	----	----	----
Arsenic	7440-38-2	0.2	µg/L	1.4	0.2	----	----	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L	0.5	0.3	----	----	----
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC213	QC215	----	----	----
Client sampling date / time				[24-Oct-2016]	[24-Oct-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610059-001	EP1610059-002	-----	-----	-----	
				Result	Result	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	5040	85	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.4	<0.1	----	----	----	
Manganese	7439-96-5	0.5	µg/L	13.8	8.6	----	----	----	
Nickel	7440-02-0	0.5	µg/L	2.0	2.1	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.2	<0.2	----	----	----	
Zinc	7440-66-6	1	µg/L	2	<1	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	3920	42	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	4.4	0.2	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	0.10	<0.05	----	----	----	
Chromium	7440-47-3	0.2	µg/L	11.5	0.3	----	----	----	
Copper	7440-50-8	0.5	µg/L	6.6	<0.5	----	----	----	
Iron	7439-89-6	2	µg/L	7570	107	----	----	----	
Lead	7439-92-1	0.1	µg/L	49.8	<0.1	----	----	----	
Manganese	7439-96-5	0.5	µg/L	13.9	8.7	----	----	----	
Selenium	7782-49-2	0.2	µg/L	1.0	<0.2	----	----	----	
Nickel	7440-02-0	0.5	µg/L	3.0	2.2	----	----	----	
Zinc	7440-66-6	1	µg/L	5	1	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.22	<0.01	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.04	<0.01	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	<0.01	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.4	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	0.4	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.38	0.01	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	<0.01	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC213	QC215	----	----	----
Client sampling date / time				[24-Oct-2016]	[24-Oct-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610059-001	EP1610059-002	-----	-----	-----	
				Result	Result	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	78.3	34.8	----	----	----	
Total Cations	----	0.01	meq/L	77.3	36.1	----	----	----	
Ionic Balance	----	0.01	%	0.61	1.86	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	~5	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	~5	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1610059	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 24-Oct-2016
Order number	: ----	Date Analysis Commenced	: 24-Oct-2016
C-O-C number	: ----	Issue Date	: 31-Oct-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 629526)									
EP1610055-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.54	7.59	0.661	0% - 20%
EP1610060-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.87	7.88	0.127	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 629525)									
EP1610047-009	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	158000	158000	0.167	0% - 20%
EP1610051-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	255000	255000	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 631978)									
EP1610018-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	347	350	0.765	0% - 20%
EA045: Turbidity (QC Lot: 630026)									
EP1610017-002	Anonymous	EA045: Turbidity	----	0.1	NTU	34.7	35.0	0.860	0% - 20%
EP1610094-007	Anonymous	EA045: Turbidity	----	0.1	NTU	178	178	0.224	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 629527)									
EP1610055-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	163	158	2.87	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	163	158	2.87	0% - 20%
EP1610060-009	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	109	107	1.42	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	109	107	1.42	0% - 20%
ED038A: Acidity (QC Lot: 632287)									
EP1609928-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EP1610059-002	QC215	ED038: Acidity as CaCO3	----	1	mg/L	11	11	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 628447)									
EP1610059-001	QC213	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	159	160	0.879	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED045G: Chloride by Discrete Analyser (QC Lot: 628448)									
EP1610059-001	QC213	ED045G: Chloride	16887-00-6	1	mg/L	2640	2610	1.32	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 632151)									
EP1610047-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1250	1260	0.318	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	4760	4820	1.23	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	37600	36900	1.85	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	1710	1760	2.65	0% - 20%
EP1610047-010	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	631	608	3.71	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	1830	1780	2.94	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	13900	13000	6.55	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	679	668	1.69	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 631840)									
EP1610059-002	QC215	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 632881)									
EN1603833-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES1624013-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 632177)									
ES1624219-008	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	4.4	4.4	0.00	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.1	3.0	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	0.8	0.7	14.2	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	5.3	5.1	3.48	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	2	2	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	48	46	5.17	No Limit
EP1610059-001	QC213	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.4	0.3	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.4	1.4	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.5	0.5	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	13.8	13.7	1.36	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	2.0	2.1	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	2	2	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	10	10	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 632178)									
EP1610059-001	QC213	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.2	0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	5040	5030	0.232	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 632183)									
EP1610059-001	QC213	EG094B-T: Selenium	7782-49-2	0.2	µg/L	1.0	1.0	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 632183) - continued									
EP1610059-001	QC213	EG094B-T: Iron	7439-89-6	2	µg/L	7570	7450	1.59	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 632184)									
ES1624219-009	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.12	0.14	13.4	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.6	0.6	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	11.5	11.6	0.897	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.4	0.3	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	5.7	5.9	2.63	0% - 50%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	1.7	1.9	7.41	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	19.2	19.4	0.943	0% - 20%
		EG094A-T: Zinc	7440-66-6	1	µg/L	5	5	0.00	No Limit
EP1610059-001	QC213	EG094A-T: Aluminium	7429-90-5	5	µg/L	207	188	9.43	0% - 20%
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.10	0.09	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	49.8	48.7	2.14	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	4.4	4.5	3.56	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	11.5	11.0	4.08	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	6.6	6.4	3.92	0% - 50%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	13.9	13.8	0.00	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	3.0	3.0	0.00	No Limit
EP1610059-001	QC213	EG094A-T: Zinc	7440-66-6	1	µg/L	5	5	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	3920	3770	3.87	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 628450)									
EP1610038-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	7.90	7.89	0.200	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 628449)									
EP1610059-001	QC213	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 628451)									
EP1610038-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	12.4	12.4	0.670	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 631336)									
EP1610059-001	QC213	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.8	20.2	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 631335)									
EP1610059-001	QC213	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.38	0.38	0.00	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 628446)									
EP1610059-001	QC213	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.01	0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 629526)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 629525)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.5	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 631978)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	108	83	111	
				<10	1000 mg/L	111	70	130	
EA045: Turbidity (QCLot: 630026)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	103	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 629527)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	108	76	126	
				<1	200 mg/L	106	90	106	
ED038A: Acidity (QCLot: 632287)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	109	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 628447)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	89	113	
				<1	100 mg/L	118	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 628448)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	93.1	84	120	
				<1	1000 mg/L	96.4	84	110	
ED093F: Dissolved Major Cations (QCLot: 632151)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	101	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.8	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.9	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 631840)									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.5	83	105	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 632881)									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	82.9	77	111	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 632177)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	95.2	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	102	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	97.1	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	87.6	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	87.7	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	85.8	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	90.5	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	94.3	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	84.3	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 632178)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	93.6	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	99.7	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 632183)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	101	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	84.8	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 632184)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	102	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	93.4	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.6	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	94.2	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	92.0	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	92.3	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	98.0	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	98.9	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	96.4	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 628450)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	112	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 628449)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.5	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 628451)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 631336)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	97.0	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 631335)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	94.5	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 628446)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	98.7	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 628447)							
EP1610059-002	QC215	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	88.6	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 628448)							
EP1610059-002	QC215	ED045G: Chloride	16887-00-6	1000 mg/L	88.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 631840)							
EP1610059-001	QC213	EG035F: Mercury	7439-97-6	0.01 mg/L	75.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 632881)							
EN1603833-003	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	78.7	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 632177)							
EP1610059-002	QC215	EG094A-F: Arsenic	7440-38-2	50 µg/L	116	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	98.3	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	88.0	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	97.9	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	90.7	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	85.4	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	109	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	102	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 632184)							
EP1610059-002	QC215	EG094A-T: Arsenic	7440-38-2	50 µg/L	117	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	98.9	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	91.2	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	103	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	94.2	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	88.2	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	117	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	89.1	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 628450)							
EP1610046-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	107	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 628449)							
EP1610059-001	QC213	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	99.5	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 628451)							
EP1610039-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	108	70	130

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 Work Order : EP1610059
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 631336)							
EP1610059-001	QC213	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.2	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 631335)							
EP1610059-001	QC213	EK067G: Total Phosphorus as P	----	1 mg/L	84.7	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 628446)							
EP1610059-002	QC215	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	101	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1610059	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 24-Oct-2016
Site	: ----	Issue Date	: 31-Oct-2016
Sampler	: HARRIET CARTER	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC213, QC215	----	----	----	25-Oct-2016	24-Oct-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC213, QC215	24-Oct-2016	----	----	----	25-Oct-2016	24-Oct-2016	✖
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC213, QC215	24-Oct-2016	----	----	----	25-Oct-2016	21-Nov-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC213, QC215	24-Oct-2016	----	----	----	27-Oct-2016	31-Oct-2016	✔
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045) QC215	24-Oct-2016	----	----	----	25-Oct-2016	26-Oct-2016	✔
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC213, QC215	24-Oct-2016	----	----	----	25-Oct-2016	07-Nov-2016	✔
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC213, QC215	24-Oct-2016	----	----	----	27-Oct-2016	07-Nov-2016	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	21-Nov-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	21-Nov-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC213, QC215	24-Oct-2016	----	----	----	28-Oct-2016	31-Oct-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) QC213, QC215	24-Oct-2016	----	----	----	27-Oct-2016	21-Nov-2016	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) QC213, QC215	24-Oct-2016	----	----	----	28-Oct-2016	21-Nov-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG094B-F) QC213, QC215	24-Oct-2016	----	----	----	27-Oct-2016	22-Apr-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094B-T) QC213, QC215	24-Oct-2016	27-Oct-2016	22-Apr-2017	✓	27-Oct-2016	22-Apr-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	21-Nov-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	26-Oct-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	21-Nov-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC213, QC215	24-Oct-2016	27-Oct-2016	21-Nov-2016	✓	28-Oct-2016	21-Nov-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC213, QC215	24-Oct-2016	27-Oct-2016	21-Nov-2016	✓	28-Oct-2016	21-Nov-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC213, QC215	24-Oct-2016	----	----	----	24-Oct-2016	26-Oct-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC215	24-Oct-2016	----	----	----	25-Oct-2016	25-Oct-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	6	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	8	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1610184**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 26-Oct-2016 16:48
Date Analysis Commenced : 26-Oct-2016
Issue Date : 07-Nov-2016 07:18



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ORC metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- Total Kjeldahl Nitrogen (EK061G) and Total Phosphorus (EK067G) conducted by ALS Melbourne, NATA accreditation no. 825, site no 13778
- MF = membrane filtration
- CFU = colony forming unit
- EA015H (Total Dissolved Solids): TDS for sample 'QC224' biasing high due to possible sample matrix interferences.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC224	----	----	----	----
Client sampling date / time		[26-Oct-2016]			----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610184-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.12	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	366	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	292	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	44.6	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	41	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	41	----	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	13	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	86	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	15	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	7	----	----	----	----	
Sodium	7440-23-5	1	mg/L	45	----	----	----	----	
Potassium	7440-09-7	1	mg/L	12	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	220	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.8	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.9	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	0.7	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC224	----	----	----	----
Client sampling date / time				[26-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610184-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	621	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	11.1	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	0.7	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	3	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	380	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	1.0	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	1.2	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	1.0	----	----	----	----	
Iron	7439-89-6	2	µg/L	1420	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.5	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	25.3	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.3	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	0.9	----	----	----	----	
Zinc	7440-66-6	1	µg/L	5	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.13	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.13	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.7	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.8	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.85	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.59	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC224	----	----	----	----
Client sampling date / time				[26-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610184-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	3.74	----	----	----	----	
Total Cations	----	0.01	meq/L	3.59	----	----	----	----	
Ionic Balance	----	0.01	%	2.12	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	330	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	330	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1610184	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 26-Oct-2016
Order number	: ----	Date Analysis Commenced	: 26-Oct-2016
C-O-C number	: ----	Issue Date	: 07-Nov-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
RICHARD TEA	Lab technician	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 632632)									
EP1610183-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.42	7.50	1.07	0% - 20%
EP1610189-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.88	6.83	0.729	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 632631)									
EP1610183-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	197	194	1.07	0% - 20%
EP1610178-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1540	1480	3.68	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 636925)									
EP1610183-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	30	29	0.00	No Limit
EP1610176-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	716	725	1.25	0% - 20%
EA045: Turbidity (QC Lot: 633143)									
EP1610170-001	Anonymous	EA045: Turbidity	----	0.1	NTU	24.4	24.4	0.00	0% - 20%
EP1610203-004	Anonymous	EA045: Turbidity	----	0.1	NTU	98.7	97.9	0.813	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 632629)									
EP1610177-009	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EP1610178-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	573	536	6.68	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	573	536	6.68	0% - 20%
ED038A: Acidity (QC Lot: 636963)									
EP1610114-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	10	10	0.00	No Limit
EP1610184-001	QC224	ED038: Acidity as CaCO3	----	1	mg/L	13	14	0.00	0% - 50%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 631666)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 631666) - continued									
EP1610184-001	QC224	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	23	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 631664)									
EP1610179-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	103	104	1.74	0% - 20%
EP1610183-005	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	41	41	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 633976)									
EP1610163-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	33	33	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	76	75	1.34	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.00	No Limit
EP1610183-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1	1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	7	6	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 637039)									
EP1610160-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1624142-004	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 637033)									
EP1610184-001	QC224	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 635383)									
EP1610184-001	QC224	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	621	615	0.856	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 635384)									
EP1610184-001	QC224	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.1	0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.8	0.8	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.9	0.9	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.7	0.6	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	11.1	10.9	1.59	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.7	0.7	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	3	3	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	220	219	0.617	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 635388)									
EP1610184-001	QC224	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	1420	1450	2.42	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 635389)									
EP1610184-001	QC224	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.5	0.5	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	1.0	1.0	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	1.2	1.2	0.00	No Limit

Page : 4 of 8
 Work Order : EP1610184
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA_NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 635389) - continued									
EP1610184-001	QC224	EG094A-T: Copper	7440-50-8	0.5	µg/L	1.0	1.1	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	25.3	27.0	6.61	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	0.9	0.8	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	5	8	46.4	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	380	393	3.49	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 631679)									
EP1610176-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	11.7	11.8	0.547	0% - 20%
EP1610183-004	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 631663)									
EP1610179-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1610183-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 631680)									
EP1610176-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.05	0.00	No Limit
EP1610183-004	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.19	0.19	0.00	0% - 50%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 640250)									
EP1610164-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	<0.1	0.00	No Limit
EP1610187-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	6.6	6.1	7.96	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 640249)									
EP1610164-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	<0.01	104	No Limit
EP1610187-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.31	0.29	4.33	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 631665)									
EP1610184-001	QC224	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.59	0.60	2.72	0% - 20%



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 632632)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 632631)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.9	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 636925)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	83	111	
				<10	1000 mg/L	110	70	130	
EA045: Turbidity (QCLot: 633143)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	100	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 632629)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	107	76	126	
				<1	200 mg/L	98.1	90	106	
ED038A: Acidity (QCLot: 636963)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	109	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 631666)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	89	113	
				<1	100 mg/L	83.2	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 631664)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	97.2	84	120	
				<1	1000 mg/L	99.5	84	110	
ED093F: Dissolved Major Cations (QCLot: 633976)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.4	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	102	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.7	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	99.1	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 637039)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	94.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 637033)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	94.0	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 635383)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	102	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	100	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 635384)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	103	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	95.8	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	101	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.1	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	100	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	95.2	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	97.4	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	108	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 635388)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	106	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	100	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 635389)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	110	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	104	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.8	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	103	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	102	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.2	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	98.5	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	97.7	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 631679)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 631663)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 631680)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 640250)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	96.5	70	117	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 640249)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	81.6	70	120	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 631665)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	101	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 631666)							
EP1610184-001	QC224	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	88.4	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 631664)							
EP1610179-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	100	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 637039)							
EP1610161-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	81.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 637033)							
EP1610211-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	74.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 635384)							
WN1603776-001	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	103	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	104	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	106	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	70	130
EG094A-F: Zinc	7440-66-6	50 µg/L	110	70	130		
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 635389)							
WN1603776-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	125	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	112	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	101	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	109	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	109	70	130
EG094A-T: Zinc	7440-66-6	50 µg/L	120	70	130		
EK055G: Ammonia as N by Discrete Analyser (QCLot: 631679)							
EP1610179-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	111	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 631663)							
EP1610176-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	104	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 631680)							



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 631680) - continued							
EP1610179-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	96.2	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 640250)							
EP1610176-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	88.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 640249)							
EP1610176-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	103	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 631665)							
EP1610184-001	QC224	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	92.2	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1610184	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 26-Oct-2016
Site	: ----	Issue Date	: 07-Nov-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG094F: Dissolved Metals in Fresh Water by ORC-ICP	WN1603776--001	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094T: Total metals in Fresh water by ORC-ICPMS	WN1603776--001	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved QC224		----	----	----	27-Oct-2016	26-Oct-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC224	26-Oct-2016		----	----	----	27-Oct-2016	26-Oct-2016	✖
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC224	26-Oct-2016		----	----	----	27-Oct-2016	23-Nov-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC224	26-Oct-2016		----	----	----	01-Nov-2016	02-Nov-2016	✔
EA045: Turbidity								
Miscellaneous Plastic bottle -unpreserved (EA045) QC224	26-Oct-2016		----	----	----	27-Oct-2016	28-Oct-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC224	26-Oct-2016	----	----	----	27-Oct-2016	09-Nov-2016	✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC224	26-Oct-2016	----	----	----	01-Nov-2016	09-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	23-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	23-Nov-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC224	26-Oct-2016	----	----	----	01-Nov-2016	02-Nov-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC224	26-Oct-2016	----	----	----	01-Nov-2016	23-Nov-2016	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC224	26-Oct-2016	----	----	----	01-Nov-2016	23-Nov-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC224	26-Oct-2016	----	----	----	31-Oct-2016	24-Apr-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC224	26-Oct-2016	31-Oct-2016	24-Apr-2017	✓	31-Oct-2016	24-Apr-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	23-Nov-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	28-Oct-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	23-Nov-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC224	26-Oct-2016	04-Nov-2016	23-Nov-2016	✓	04-Nov-2016	23-Nov-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC224	26-Oct-2016	04-Nov-2016	23-Nov-2016	✓	04-Nov-2016	23-Nov-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC224	26-Oct-2016	----	----	----	26-Oct-2016	28-Oct-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC224	26-Oct-2016	----	----	----	27-Oct-2016	27-Oct-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	1	200.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1610333**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 31-Oct-2016 16:40
Date Analysis Commenced : 31-Oct-2016
Issue Date : 07-Nov-2016 16:25



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
∅ = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC METALS conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG035: Positive Hg results have been confirmed by reanalysis.
- MF = membrane filtration
- CFU = colony forming unit
- MW006: estimate (~) is reported where the growth of presumptive bacteria on the filtered membrane is counted <10 cfu and/or >100 cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC232	----	----	----	----
Client sampling date / time				[31-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610333-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	5.22	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	339	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	224	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	169	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	<1	----	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	27	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	37	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	70	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	10	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	5	----	----	----	----	
Sodium	7440-23-5	1	mg/L	39	----	----	----	----	
Potassium	7440-09-7	1	mg/L	1	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	0.00009	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	1110	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.5	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.9	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC232	----	----	----	----
Client sampling date / time				[31-Oct-2016]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1610333-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	1330	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.7	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	1.0	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	1.0	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	<1	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	8850	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	1.9	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	11.9	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	1.8	----	----	----	----	
Iron	7439-89-6	2	µg/L	6750	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	5.8	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	2.9	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.6	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	3.1	----	----	----	----	
Zinc	7440-66-6	1	µg/L	2	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.08	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	2.70	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	2.70	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.7	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	3.4	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.06	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID				
				QC232	----	----	----	----
Client sampling date / time				[31-Oct-2016]	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1610333-001	-----	-----	-----	-----
				Result	----	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	~1	----	----	----	----
Escherichia coli	----	1	CFU/100mL	~1	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EP1610333	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 31-Oct-2016
Order number	: ----	Date Analysis Commenced	: 31-Oct-2016
C-O-C number	: ----	Issue Date	: 07-Nov-2016
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Andrew Epps	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 639111)									
EP1610355-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.91	8.91	0.00	0% - 20%
EP1610324-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.23	7.25	0.276	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 639110)									
EP1610324-009	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2540	2550	0.386	0% - 20%
EP1610371-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	960	953	0.731	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 640004)									
EP1610333-001	QC232	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	224	230	2.65	0% - 20%
EP1610355-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	127000	135000	6.08	0% - 20%
EA045: Turbidity (QC Lot: 636559)									
EP1610333-001	QC232	EA045: Turbidity	----	0.1	NTU	169	169	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 639112)									
EP1610330-011	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	441	411	7.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	441	411	7.00	0% - 20%
EP1610330-020	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	577	605	4.83	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	577	605	4.83	0% - 20%
ED038A: Acidity (QC Lot: 640019)									
EP1610293-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	14	13	0.00	0% - 50%
EP1610371-003	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	22	24	8.70	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 636535)									
EP1610311-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	44	0.00	0% - 20%

Page : 3 of 8
 Work Order : EP1610333
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA_NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 636535) - continued									
EP1610333-001	QC232	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	37	38	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 636537)									
EP1610311-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	119	121	2.15	0% - 20%
EP1610333-001	QC232	ED045G: Chloride	16887-00-6	1	mg/L	70	67	4.35	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 636809)									
EP1610333-001	QC232	ED093F: Calcium	7440-70-2	1	mg/L	10	10	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	39	40	3.06	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.00	No Limit
EP1610338-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	50	49	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	270	271	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2460	2450	0.692	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	60	61	0.00	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 640099)									
EP1610146-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1610349-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 640095)									
EP1610146-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1624701-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 639546)									
EP1610333-001	QC232	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.2	0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	1330	1320	0.308	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 639547)									
EP1610333-001	QC232	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.7	0.6	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.5	0.5	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.9	0.9	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1.0	1.0	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	1.0	1.1	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	3	103	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	1110	1120	0.651	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 639602)									
EP1610333-001	QC232	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.6	0.5	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	6750	6670	1.19	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 639603)									
EP1610333-001	QC232	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	5.8	5.7	2.24	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	1.9	1.9	0.00	No Limit

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 Work Order : EP1610333
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 639603) - continued									
EP1610333-001	QC232	EG094A-T: Chromium	7440-47-3	0.2	µg/L	11.9	11.5	3.48	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	1.8	1.9	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	2.9	2.7	7.51	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	3.1	2.9	5.91	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	2	2	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	8850	8580	3.10	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 636544)									
EP1610333-001	QC232	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.08	0.08	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 636536)									
EP1610311-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.00	No Limit
EP1610333-001	QC232	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 636545)									
EP1610340-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.34	0.33	3.33	0% - 20%
EP1610333-001	QC232	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.70	2.74	1.14	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 642485)									
EP1610312-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.8	6.77	No Limit
EP1610248-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.7	34.6	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 642484)									
EP1610248-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.05	<0.05	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 636539)									
EP1610333-001	QC232	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 639111)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 639110)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	95.7	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 640004)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	106	83	111	
				<10	1000 mg/L	109	70	130	
EA045: Turbidity (QCLot: 636559)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 639112)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	96.2	76	126	
				<1	200 mg/L	94.7	90	106	
ED038A: Acidity (QCLot: 640019)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	103	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 636535)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	106	89	113	
				<1	100 mg/L	103	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 636537)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	108	84	120	
				<1	1000 mg/L	89.0	84	110	
ED093F: Dissolved Major Cations (QCLot: 636809)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	103	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	106	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.5	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 640099)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	101	83	105	
EG035T: Total Mercury by FIMS (QCLot: 640095)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	100	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 639546)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	106	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	110	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 639547)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	106	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	111	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	106	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	105	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	107	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	101	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	105	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	107	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 639602)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	106	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	85.6	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 639603)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	111	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.0	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	91.5	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	103	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	103	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	107	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	99.3	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	87.0	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 636544)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	110	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 636536)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.6	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 636545)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	102	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 642485)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	93.3	70	111	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 642484)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	100	77	109	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 636539)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	100	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 636535)							
EP1610314-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	78.3	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 636537)							
EP1610314-002	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	105	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 640099)							
EP1610146-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	72.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 640095)							
EP1610146-002	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	79.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 639547)							
EP1610335-001	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	124	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	108	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	106	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	109	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	98.5	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	110	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	105	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 639603)							
EP1610335-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	113	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	103	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	111	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	110	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	112	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	102	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	115	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	92.3	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 636544)							
EP1610333-001	QC232	EK055G: Ammonia as N	7664-41-7	1 mg/L	110	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 636536)							
EP1610314-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	102	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 636545)							
EP1610333-001	QC232	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130

Page : 8 of 8
 Work Order : EP1610333
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 642485)							
EP1610248-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	74.8	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 642484)							
EP1610248-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	108	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 636539)							
EP1610333-001	QC232	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	86.3	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1610333	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 31-Oct-2016
Site	: ----	Issue Date	: 07-Nov-2016
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1610333--001	QC232	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved QC232		----	----	----	02-Nov-2016	31-Oct-2016	2

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Phosphorus as P By Discrete Analyser	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC232	31-Oct-2016		----	----	----	02-Nov-2016	31-Oct-2016	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC232	31-Oct-2016		----	----	----	02-Nov-2016	28-Nov-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle -unpreserved (EA015H) QC232	31-Oct-2016		----	----	----	03-Nov-2016	07-Nov-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045) QC232	31-Oct-2016	----	----	----	31-Oct-2016	02-Nov-2016	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC232	31-Oct-2016	----	----	----	02-Nov-2016	14-Nov-2016	✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC232	31-Oct-2016	----	----	----	03-Nov-2016	14-Nov-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	28-Nov-2016	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	28-Nov-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC232	31-Oct-2016	----	----	----	02-Nov-2016	07-Nov-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC232	31-Oct-2016	----	----	----	03-Nov-2016	28-Nov-2016	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC232	31-Oct-2016	----	----	----	03-Nov-2016	28-Nov-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC232	31-Oct-2016	----	----	----	03-Nov-2016	29-Apr-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC232	31-Oct-2016	03-Nov-2016	29-Apr-2017	✓	03-Nov-2016	29-Apr-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	28-Nov-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	02-Nov-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	28-Nov-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC232	31-Oct-2016	07-Nov-2016	28-Nov-2016	✓	07-Nov-2016	28-Nov-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC232	31-Oct-2016	07-Nov-2016	28-Nov-2016	✓	07-Nov-2016	28-Nov-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC232	31-Oct-2016	----	----	----	31-Oct-2016	02-Nov-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC232	31-Oct-2016	----	----	----	31-Oct-2016	01-Nov-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: Harriet Carter
Project name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA
COC number: Not provided
Turn around time: 5 Day
Date/Time received: Nov 23, 2016 8:10 AM
Eurofins | mgt reference: **524710**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Harriet Carter - Harriet.Carter@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **524710-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Nov 23, 2016

Client Sample ID			MW1	MW2	MW3	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20175	M16-No20176	M16-No20177	M16-No20178
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	13	18	48	24
Chloride	1	mg/L	36	88	20	22
Conductivity (at 25°C)	1	uS/cm	460	600	250	200
pH	0.1	pH Units	7.4	7.2	6.8	6.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	25	33	11	5.7
Total Dissolved Solids	10	mg/L	320	420	150	130
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	110	140	90	61
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	110	140	90	61
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.03	0.11	0.14
Nitrate & Nitrite (as N)	0.05	mg/L	12	0.60	0.83	3.1
Nitrate (as N)	0.02	mg/L	12	0.60	0.83	3.1
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.0	0.4	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.0	0.5	0.8
Total Nitrogen (as N)	0.2	mg/L	12	1.6	1.3	3.9
Heavy Metals						
Aluminium	0.05	mg/L	1.0	1.3	0.18	0.67
Aluminium (filtered)	0.05	mg/L	< 0.05	0.06	0.19	0.05
Arsenic	0.001	mg/L	0.007	0.002	0.007	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00023	< 0.00005	0.00025	0.00006
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.003	0.004	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	0.002	0.003	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.71	0.38	0.60	0.13
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.004	0.001	0.003	< 0.001

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-No20175	M16-No20176	M16-No20177	M16-No20178
Eurofins mgt Sample No.			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.007	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0003	< 0.0001	0.0004	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.001	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.028	0.008	0.027	0.013
Selenium (filtered)	0.001	mg/L	0.004	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	0.023	0.008	0.007	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	55	75	38	33
Magnesium	0.5	mg/L	5.8	3.9	4.7	2.2
Potassium	0.5	mg/L	27	< 0.5	1.8	< 0.5
Sodium	0.5	mg/L	22	46	9.1	6.8

Client Sample ID			MW5 Water	MW6 Water	SWL1-1 Water	SWL1-2 Water
Sample Matrix			M16-No20179	M16-No20180	M16-No20181	M16-No20182
Eurofins mgt Sample No.			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	39	72	< 10	< 10
Chloride	1	mg/L	33	100	80	82
Conductivity (at 25°C)	1	uS/cm	130	630	420	390
pH	0.1	pH Units	5.4	5.9	7.3	7.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	< 5	89	36	37
Total Dissolved Solids	10	mg/L	^{Q19} 180	380	240	230
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	49	51	52
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	49	51	52
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.14	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.4	0.16	0.10
Nitrate (as N)	0.02	mg/L	< 0.02	1.4	0.16	0.10
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	4.5	0.5	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.5	0.6	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	4.5	2.0	0.6	0.5

Client Sample ID			MW5 Water	MW6 Water	SWL1-1 Water	SWL1-2 Water
Sample Matrix			M16-No20179	M16-No20180	M16-No20181	M16-No20182
Eurofins mgt Sample No.			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.7	0.16	0.10	< 0.05
Aluminium (filtered)	0.05	mg/L	0.29	0.16	0.05	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00019	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.002	0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.65	0.28	0.20	0.20
Iron (filtered)	0.05	mg/L	0.20	0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.008	0.012
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	0.012
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.008	0.006	0.004	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.021	0.006	0.012	0.011
Zinc (filtered)	0.005	mg/L	0.029	< 0.005	0.008	0.008
Alkali Metals						
Calcium	0.5	mg/L	7.1	28	17	17
Magnesium	0.5	mg/L	4.2	15	9.8	9.8
Potassium	0.5	mg/L	0.6	13	4.4	4.9
Sodium	0.5	mg/L	11	54	46	48

Client Sample ID			SWL1-3 Water	SWL2-1 Water	SWL2-2 Water	SWL2-3 Water
Sample Matrix			M16-No20183	M16-No20184	M16-No20185	M16-No20186
Eurofins mgt Sample No.			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	70	63	63	62
Conductivity (at 25°C)	1	uS/cm	370	390	390	380
pH	0.1	pH Units	7.3	7.8	7.6	7.7
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	26	34	34	34
Total Dissolved Solids	10	mg/L	210	230	240	210
Turbidity	1	NTU	< 1	< 1	< 1	< 1

Client Sample ID			SWL1-3	SWL2-1	SWL2-2	SWL2-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20183	M16-No20184	M16-No20185	M16-No20186
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	65	68	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	54	65	68	72
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.05	0.12	0.31
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.5	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.5	0.4
Heavy Metals						
Aluminium	0.05	mg/L	0.20	0.19	0.20	0.32
Aluminium (filtered)	0.05	mg/L	< 0.05	0.11	0.11	0.11
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.36	0.19	0.16	0.19
Iron (filtered)	0.05	mg/L	0.14	0.07	0.07	0.07
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.012	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.003	0.002	0.002	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	< 0.005	0.007	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	16	20	20	20
Magnesium	0.5	mg/L	7.5	10.0	9.6	10
Potassium	0.5	mg/L	3.7	3.5	3.4	3.4
Sodium	0.5	mg/L	42	39	37	39
Pathogens						
E.coli	1	MPN/100mL	10	6	7	7
Thermotolerant Coliforms	1	MPN/100mL	89	39	28	12

Client Sample ID			SWL3-1	SWL3-2	MW55	SWL4-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20187	M16-No20188	M16-No20190	M16-No20191
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	< 0.02	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	0.2	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	0.2	-
BTEX						
Benzene	0.001	mg/L	-	-	< 0.001	-
Toluene	0.001	mg/L	-	-	< 0.001	-
Ethylbenzene	0.001	mg/L	-	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.002	-
o-Xylene	0.001	mg/L	-	-	< 0.001	-
Xylenes - Total	0.003	mg/L	-	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	-	-	92	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	< 0.01	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	0.07	-
TRH C6-C10	0.02	mg/L	-	-	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	< 0.02	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	0.07	-
TRH >C16-C34	0.1	mg/L	-	-	0.2	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	50	< 10
Chloride	1	mg/L	59	59	88	150
Conductivity (at 25°C)	1	uS/cm	360	370	830	620
pH	0.1	pH Units	7.6	7.7	6.6	6.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	22	22	170	73
Total Dissolved Solids	10	mg/L	230	230	550	400
Turbidity	1	NTU	1.3	1.2	-	11
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	72	71	120	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	72	71	120	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.40	0.26
Nitrate & Nitrite (as N)	0.05	mg/L	0.13	0.12	2.6	0.11
Nitrate (as N)	0.02	mg/L	0.13	0.12	2.6	0.11
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.05	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.2	0.8	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.2	1.2	0.5
Total Nitrogen (as N)	0.2	mg/L	0.5	0.3	3.8	0.6

Client Sample ID			SWL3-1	SWL3-2	MW55	SWL4-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20187	M16-No20188	M16-No20190	M16-No20191
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.35	0.33	0.21	0.12
Aluminium (filtered)	0.05	mg/L	0.18	0.19	0.11	0.08
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.003	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.19	0.19	0.28	0.58
Iron (filtered)	0.05	mg/L	0.08	0.08	0.05	0.07
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.013
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.011
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	0.001	0.003	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Alkali Metals						
Calcium	0.5	mg/L	20	20	72	21
Magnesium	0.5	mg/L	8.1	8.3	13	15
Potassium	0.5	mg/L	1.8	1.8	18	5.3
Sodium	0.5	mg/L	40	40	75	79
Pathogens						
E.coli	1	MPN/100mL	12	10	-	1400
Thermotolerant Coliforms	1	MPN/100mL	37	26	-	3700

Client Sample ID			SWL4-2	SWL4-3	QC238	QC240
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20192	M16-No20193	M16-No20194	M16-No20195
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	160	150	63	77
Conductivity (at 25°C)	1	uS/cm	620	620	390	430
pH	0.1	pH Units	7.0	6.9	7.7	7.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	75	77	36	37
Total Dissolved Solids	10	mg/L	420	410	230	250
Turbidity	1	NTU	2.0	2.3	1.3	3.6

Client Sample ID			SWL4-2	SWL4-3	QC238	QC240
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No20192	M16-No20193	M16-No20194	M16-No20195
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	65	51
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	65	51
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.03	0.02	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	0.14	0.11	< 0.05	0.16
Nitrate (as N)	0.02	mg/L	0.14	0.11	0.02	0.16
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.6	0.7	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.6	0.7	0.4
Total Nitrogen (as N)	0.2	mg/L	0.7	0.7	0.7	0.6
Heavy Metals						
Aluminium	0.05	mg/L	0.12	0.20	0.13	0.96
Aluminium (filtered)	0.05	mg/L	0.05	< 0.05	0.11	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.28	0.34	0.18	0.19
Iron (filtered)	0.05	mg/L	< 0.05	0.05	0.07	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.010	0.010	< 0.005	0.008
Manganese (filtered)	0.005	mg/L	0.008	0.009	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.018	0.011	0.006	0.016
Zinc (filtered)	0.005	mg/L	0.007	0.007	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	21	21	20	17
Magnesium	0.5	mg/L	15	15	10	10.0
Potassium	0.5	mg/L	5.2	5.0	3.4	4.5
Sodium	0.5	mg/L	76	77	39	47
Pathogens						
E.coli	1	MPN/100mL	410	150	7	20
Thermotolerant Coliforms	1	MPN/100mL	650	>2400	170	210

Client Sample ID			QC242	QC243	QC244
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-No20196	M16-No20197	M16-No20198
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	< 10	-	-
Chloride	1	mg/L	36	-	-
Conductivity (at 25°C)	1	uS/cm	470	-	-
pH	0.1	pH Units	7.6	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as SO ₄)	5	mg/L	27	-	-
Total Dissolved Solids	10	mg/L	330	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	100	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	100	-	-
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.02	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	12	-	-
Nitrate (as N)	0.02	mg/L	12	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	1.2	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	-	-
Total Nitrogen (as N)	0.2	mg/L	13	-	-
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.27	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.015	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005

Client Sample ID			QC242	QC243	QC244
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-No20196	M16-No20197	M16-No20198
Date Sampled			Nov 22, 2016	Nov 22, 2016	Nov 22, 2016
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	50	-	-
Magnesium	0.5	mg/L	5.3	-	-
Potassium	0.5	mg/L	26	-	-
Sodium	0.5	mg/L	21	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Nov 25, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 23, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Nov 23, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Nov 25, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 23, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 23, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 23, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 23, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 23, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Nov 23, 2016	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 23, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 23, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 23, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 23, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 25, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 25, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 25, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 25, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 24, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 24, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 23, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 24, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Nov 23, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Nov 23, 2016	24 Hour

Description	Testing Site	Extracted	Holding Time
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Nov 25, 2016	28 Day
- Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Nov 25, 2016	7 Day
- Method: APHA 4500 TKN			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	105			70-130	Pass	
TRH C10-C14	%	124			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	104			70-130	Pass	
Toluene	%	105			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
m&p-Xylenes	%	104			70-130	Pass	
o-Xylene	%	106			70-130	Pass	
Xylenes - Total	%	105			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	118			70-130	Pass	
TRH C6-C10	%	97			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	116			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	95			70-130	Pass	
Chloride	%	107			70-130	Pass	
Phosphate total (as P)	%	109			70-130	Pass	
Phosphorus reactive (as P)	%	124			70-130	Pass	
Sulphate (as SO ₄)	%	109			70-130	Pass	
Total Dissolved Solids	%	103			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	111			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	115			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
LCS - % Recovery								
Nitrogens (speciated)								
Ammonia (as N)	%	87			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	90			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	99			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	117			70-130	Pass		
Aluminium (filtered)	%	96			70-130	Pass		
Arsenic	%	129			70-130	Pass		
Arsenic (filtered)	%	106			70-130	Pass		
Cadmium	%	109			70-130	Pass		
Cadmium (filtered)	%	107			70-130	Pass		
Chromium	%	123			70-130	Pass		
Chromium (filtered)	%	106			70-130	Pass		
Copper	%	122			70-130	Pass		
Copper (filtered)	%	107			70-130	Pass		
Iron	%	119			70-130	Pass		
Iron (filtered)	%	105			70-130	Pass		
Lead	%	124			70-130	Pass		
Lead (filtered)	%	105			70-130	Pass		
Manganese	%	124			70-130	Pass		
Manganese (filtered)	%	105			70-130	Pass		
Mercury	%	128			70-130	Pass		
Mercury (filtered)	%	108			70-130	Pass		
Nickel	%	122			70-130	Pass		
Nickel (filtered)	%	105			70-130	Pass		
Selenium	%	112			70-130	Pass		
Selenium (filtered)	%	95			70-130	Pass		
Zinc	%	125			70-130	Pass		
Zinc (filtered)	%	107			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	97			70-130	Pass		
Magnesium	%	99			70-130	Pass		
Potassium	%	102			70-130	Pass		
Sodium	%	116			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as SO4)	M16-No20175	CP	%	108		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Total Kjeldahl Nitrogen (as N)	B16-No20440	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	S16-No21991	NCP	%	117		70-130	Pass	
Cadmium (filtered)	S16-No21991	NCP	%	92		70-130	Pass	
Mercury (filtered)	S16-No21991	NCP	%	81		70-130	Pass	
Selenium (filtered)	S16-No21991	NCP	%	87		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Carbonate Alkalinity (as CaCO ₃)	M16-No20176	CP	%	95		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-No20176	CP	%	128		70-130	Pass	
Cadmium	M16-No20176	CP	%	107		70-130	Pass	
Chromium	M16-No20176	CP	%	121		70-130	Pass	
Copper	M16-No20176	CP	%	118		70-130	Pass	
Iron	M16-No20176	CP	%	117		70-130	Pass	
Lead	M16-No20176	CP	%	120		70-130	Pass	
Manganese	M16-No20176	CP	%	122		70-130	Pass	
Mercury	M16-No20176	CP	%	125		70-130	Pass	
Nickel	M16-No20176	CP	%	118		70-130	Pass	
Selenium	M16-No20176	CP	%	114		70-130	Pass	
Zinc	M16-No20176	CP	%	121		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-No20176	CP	%	103		70-130	Pass	
Magnesium	M16-No20176	CP	%	109		70-130	Pass	
Potassium	M16-No20176	CP	%	107		70-130	Pass	
Sodium	M16-No20176	CP	%	102		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No20177	CP	%	84		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No20177	CP	%	78		70-130	Pass	
Nitrate (as N)	M16-No20177	CP	%	77		70-130	Pass	
Nitrite (as N)	M16-No20177	CP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-No20178	CP	%	122		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No20178	CP	%	84		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No20178	CP	%	70		70-130	Pass	
Nitrate (as N)	M16-No20178	CP	%	70		70-130	Pass	
Nitrite (as N)	M16-No20178	CP	%	90		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-No20186	CP	%	124		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-No20187	CP	%	107		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No20187	CP	%	86		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No20187	CP	%	80		70-130	Pass	
Nitrate (as N)	M16-No20187	CP	%	79		70-130	Pass	
Nitrite (as N)	M16-No20187	CP	%	91		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No20188	CP	%	81		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No20188	CP	%	76		70-130	Pass	
Nitrate (as N)	M16-No20188	CP	%	75		70-130	Pass	
Nitrite (as N)	M16-No20188	CP	%	91		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M16-No20684	NCP	%	104			70-130	Pass	
TRH C10-C14	M16-No20190	CP	%	86			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-No20684	NCP	%	94			70-130	Pass	
Toluene	M16-No20684	NCP	%	93			70-130	Pass	
Ethylbenzene	M16-No20684	NCP	%	93			70-130	Pass	
m&p-Xylenes	M16-No20684	NCP	%	95			70-130	Pass	
o-Xylene	M16-No20684	NCP	%	96			70-130	Pass	
Xylenes - Total	M16-No20684	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-No20684	NCP	%	108			70-130	Pass	
TRH C6-C10	M16-No20684	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-No20190	CP	%	84			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-No20191	CP	%	121			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	M16-No20198	CP	%	88			70-130	Pass	
Arsenic (filtered)	M16-No20198	CP	%	100			70-130	Pass	
Cadmium (filtered)	M16-No20198	CP	%	107			70-130	Pass	
Chromium (filtered)	M16-No20198	CP	%	108			70-130	Pass	
Copper (filtered)	M16-No20198	CP	%	101			70-130	Pass	
Lead (filtered)	M16-No20198	CP	%	74			70-130	Pass	
Manganese (filtered)	M16-No20198	CP	%	108			70-130	Pass	
Nickel (filtered)	M16-No20198	CP	%	106			70-130	Pass	
Zinc (filtered)	M16-No20198	CP	%	112			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-No20175	CP	mg/L	13	14	1.0	30%	Pass	
Conductivity (at 25°C)	M16-No20175	CP	uS/cm	460	400	14	30%	Pass	
pH	M16-No20175	CP	pH Units	7.4	7.5	pass	30%	Pass	
Phosphate total (as P)	M16-No20175	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Carbonate Alkalinity (as CaCO ₃)	M16-No20175	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No20175	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-No20175	CP	mg/L	1.0	1.1	9.0	30%	Pass	
Cadmium (filtered)	S16-No21990	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Copper	S16-No21990	NCP	mg/L	0.040	0.037	10	30%	Pass	
Selenium (filtered)	S16-No21990	NCP	mg/L	0.004	0.003	11	30%	Pass	
Zinc	S16-No21990	NCP	mg/L	0.11	0.098	11	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	S16-No23453	NCP	mg/L	7.0	7.3	4.0	30%	Pass
Magnesium	S16-No23453	NCP	mg/L	2.4	2.5	5.0	30%	Pass
Potassium	S16-No23453	NCP	mg/L	1.2	1.3	9.0	30%	Pass
Sodium	S16-No23453	NCP	mg/L	30	32	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No20176	CP	mg/L	18	18	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-No20177	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No20177	CP	mg/L	0.11	0.10	10	30%	Pass
Nitrate & Nitrite (as N)	M16-No20177	CP	mg/L	0.83	0.83	<1	30%	Pass
Nitrate (as N)	M16-No20177	CP	mg/L	0.83	0.83	<1	30%	Pass
Nitrite (as N)	M16-No20177	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No20178	CP	mg/L	0.14	0.11	26	30%	Pass
Nitrate & Nitrite (as N)	M16-No20178	CP	mg/L	3.1	3.1	1.0	30%	Pass
Nitrate (as N)	M16-No20178	CP	mg/L	3.1	3.1	1.0	30%	Pass
Nitrite (as N)	M16-No20178	CP	mg/L	0.02	0.02	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No20181	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-No20182	CP	mg/L	230	240	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No20185	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-No20185	CP	uS/cm	390	400	<1	30%	Pass
Phosphate total (as P)	M16-No20185	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No20185	CP	mg/L	68	67	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No20185	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No20185	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No20185	CP	mg/L	68	67	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-No20185	CP	mg/L	0.20	0.19	4.0	30%	Pass
Arsenic	M16-No20185	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-No20185	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-No20185	CP	mg/L	0.16	0.17	3.0	30%	Pass
Lead	M16-No20185	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-No20185	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-No20185	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-No20185	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M16-No20185	CP	mg/L	0.002	0.002	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-No20186	CP	mg/L	62	63	<1	30%	Pass
Sulphate (as SO ₄)	M16-No20186	CP	mg/L	34	34	<1	30%	Pass
Turbidity	M16-No20186	CP	NTU	< 1	< 1	<1	30%	Pass

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No20187	CP	mg/L	0.03	0.03	6.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No20187	CP	mg/L	0.13	0.12	4.0	30%	Pass
Nitrate (as N)	M16-No20187	CP	mg/L	0.13	0.12	4.0	30%	Pass
Nitrite (as N)	M16-No20187	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No20188	CP	mg/L	0.03	0.03	10	30%	Pass
Nitrate & Nitrite (as N)	M16-No20188	CP	mg/L	0.12	0.12	3.0	30%	Pass
Nitrate (as N)	M16-No20188	CP	mg/L	0.12	0.12	3.0	30%	Pass
Nitrite (as N)	M16-No20188	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S16-No23051	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S16-No23051	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	S16-No23051	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	S16-No23051	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	S16-No23051	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	S16-No23051	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	S16-No23051	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S16-No23051	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	S16-No23051	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-No20190	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-No20190	CP	mg/L	1.2	1.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No20192	CP	uS/cm	620	580	15	30%	Pass
pH	M16-No20192	CP	pH Units	7.0	7.0	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No20192	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No20192	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No20192	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No20192	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-No20193	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	M16-No20193	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-No20193	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-No20193	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-No20193	CP	mg/L	0.05	< 0.05	3.0	30%	Pass
Lead (filtered)	M16-No20193	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-No20193	CP	mg/L	0.009	0.009	1.0	30%	Pass
Mercury (filtered)	M16-No20193	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-No20193	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M16-No20193	CP	mg/L	0.007	0.007	3.0	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	M16-No20196	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M16-No20196	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M16-No20196	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-No20196	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-No20196	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-No20196	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No20196	CP	uS/cm	470	400	15	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No20196	CP	mg/L	100	87	16	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No20196	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No20196	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No20196	CP	mg/L	100	87	16	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (filtered)	M16-No20197	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Zinc (filtered)	M16-No20197	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 24, 2016 8:33 AM**
Eurofins | mgt reference: **524859**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **524859-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Nov 24, 2016**

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-No21223	M16-No21224	M16-No21225	M16-No21226
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	10	30	33	39
Chloride	1	mg/L	400	2100	9700	1600
Conductivity (at 25°C)	1	uS/cm	1500	6800	29000	4900
pH	0.1	pH Units	6.9	5.5	7.2	6.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.31	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.27	< 0.05
Sulphate (as S)	5	mg/L	15	73	340	60
Total Dissolved Solids	10	mg/L	990	3800	19000	2800
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	130	< 20	140	21
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	130	< 20	140	21
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.08	0.19	0.15
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	28	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	27	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.12	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	0.7	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.8	0.2
Total Nitrogen (as N)	0.2	mg/L	0.2	< 0.2	29	0.7
Heavy Metals						
Aluminium	0.05	mg/L	0.20	0.55	0.37	0.11
Aluminium (filtered)	0.05	mg/L	< 0.05	0.06	0.18	< 0.05
Arsenic	0.001	mg/L	0.003	0.004	0.004	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.003	0.004	0.001
Cadmium	0.00005	mg/L	0.00007	0.00008	0.0016	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00008	0.0015	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.027	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.017	< 0.001
Iron	0.05	mg/L	4.4	4.4	1.2	8.8
Iron (filtered)	0.05	mg/L	< 0.05	2.8	0.44	8.2
Lead	0.001	mg/L	< 0.001	0.018	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-No21223	M16-No21224	M16-No21225	M16-No21226
Eurofins mgt Sample No.			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Manganese	0.005	mg/L	0.041	0.047	0.22	0.009
Manganese (filtered)	0.005	mg/L	0.036	0.047	0.20	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	0.023	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	0.019	< 0.001
Selenium	0.001	mg/L	0.003	< 0.001	0.014	0.001
Selenium (filtered)	0.001	mg/L	0.003	< 0.001	0.014	0.002
Zinc	0.005	mg/L	0.006	0.039	0.79	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.039	0.63	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	74	42	150	23
Magnesium	0.5	mg/L	27	180	650	120
Potassium	0.5	mg/L	5.9	17	110	16
Sodium	0.5	mg/L	160	970	5400	760

Client Sample ID			MW50 Water	MW47 Water	MW46 Water	MW45 Water
Sample Matrix			M16-No21227	M16-No21228	M16-No21229	M16-No21230
Eurofins mgt Sample No.			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	25	< 10	15	< 10
Chloride	1	mg/L	2800	520	920	470
Conductivity (at 25°C)	1	uS/cm	8700	2000	3300	1800
pH	0.1	pH Units	6.5	7.9	7.4	7.7
Phosphate total (as P)	0.05	mg/L	< 0.05	0.11	< 0.05	0.06
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.06	< 0.05	< 0.05
Sulphate (as S)	5	mg/L	59	11	18	6.6
Total Dissolved Solids	10	mg/L	5000	1300	2100	1000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	28	210	260	230
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	28	210	260	230
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	0.07	0.40	0.22
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.2	0.5	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.2	1.0	0.4
Total Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.9	0.5

Client Sample ID			MW50	MW47	MW46	MW45
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21227	M16-No21228	M16-No21229	M16-No21230
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.14	1.6	0.41	0.72
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.005	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.83	1.1	0.62	1.6
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.004	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.018	0.016	0.012	< 0.005
Manganese (filtered)	0.005	mg/L	0.017	0.013	0.006	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.003	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.010	0.029	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	30	48	99	61
Magnesium	0.5	mg/L	170	37	71	38
Potassium	0.5	mg/L	36	3.4	6.0	4.6
Sodium	0.5	mg/L	1400	300	420	220

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL21-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21231	M16-No21232	M16-No21233	M16-No21234
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	1100	1100	1100	440
Conductivity (at 25°C)	1	uS/cm	3600	3600	3600	1600
pH	0.1	pH Units	7.1	7.1	6.9	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.53
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.35
Sulphate (as S)	5	mg/L	23	23	23	5.1
Total Dissolved Solids	10	mg/L	2400	2400	2300	1100
Turbidity	1	NTU	5.2	5.1	4.9	15

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL21-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21231	M16-No21232	M16-No21233	M16-No21234
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	28	27	26	78
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	28	27	26	78
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.09	0.10	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	0.9	1.1	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.2	1.2	1.2
Total Nitrogen (as N)	0.2	mg/L	0.9	1.0	1.2	1.0
Heavy Metals						
Aluminium	0.05	mg/L	0.06	0.07	0.07	0.11
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.020
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.9	3.1	2.9	3.0
Iron (filtered)	0.05	mg/L	0.67	0.70	0.65	0.87
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.009	0.010	0.009	0.060
Manganese (filtered)	0.005	mg/L	0.007	0.008	0.008	0.058
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.001	0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.007	0.016
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	11	10	11	21
Magnesium	0.5	mg/L	66	62	66	42
Potassium	0.5	mg/L	9.6	9.7	10	8.0
Sodium	0.5	mg/L	620	590	610	240
Pathogens						
E.coli	1	MPN/100mL	20	41	20	200
Thermotolerant Coliforms	1	MPN/100mL	170	1400	310	1600

Client Sample ID			SWL21-2	SWL21-3	QC248	QC249
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21235	M16-No21236	M16-No21237	M16-No21238
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	85	26	-
Chloride	1	mg/L	480	480	2700	-
Conductivity (at 25°C)	1	uS/cm	1600	1600	8900	-
pH	0.1	pH Units	7.6	7.6	6.3	-
Phosphate total (as P)	0.05	mg/L	0.51	0.57	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	0.31	0.36	< 0.05	-
Sulphate (as S)	5	mg/L	5.1	6.3	57	-
Total Dissolved Solids	10	mg/L	1100	1200	4900	-
Turbidity	1	NTU	58	16	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	80	77	39	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	80	77	39	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.02	0.18	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.1	1.1	0.1	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.2	0.2	-
Total Nitrogen (as N)	0.2	mg/L	1.1	1.1	0.3	-
Heavy Metals						
Aluminium	0.05	mg/L	0.11	0.09	0.37	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	3.2	2.8	1.7	-
Iron (filtered)	0.05	mg/L	1.0	0.95	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.065	0.074	0.018	-
Manganese (filtered)	0.005	mg/L	0.060	0.074	0.017	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.002	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.020	< 0.005	0.006	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL21-2	SWL21-3	QC248	QC249
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21235	M16-No21236	M16-No21237	M16-No21238
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	21	22	29	-
Magnesium	0.5	mg/L	41	43	170	-
Potassium	0.5	mg/L	7.7	7.1	35	-
Sodium	0.5	mg/L	250	250	1400	-
Pathogens						
E.coli	1	MPN/100mL	4600	230	-	-
Thermotolerant Coliforms	1	MPN/100mL	4600	300	-	-

Client Sample ID			QC250	SWL18-1	SWL18-2	SWL18-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21239	M16-No21240	M16-No21241	M16-No21242
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	100	100	140
Chloride	1	mg/L	-	940	890	930
Conductivity (at 25°C)	1	uS/cm	-	3000	3000	3000
pH	0.1	pH Units	-	7.6	7.5	7.6
Phosphate total (as P)	0.05	mg/L	-	0.50	0.50	0.49
Phosphorus reactive (as P)	0.05	mg/L	-	0.35	0.37	0.36
Sulphate (as S)	5	mg/L	-	15	15	16
Total Dissolved Solids	10	mg/L	-	2000	2100	2000
Turbidity	1	NTU	-	8.8	8.3	7.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	110	85	100
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	110	85	100
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	< 0.01	0.03	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	1.2	1.2	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.3	1.3	1.3
Total Nitrogen (as N)	0.2	mg/L	-	1.2	1.2	1.1
Heavy Metals						
Aluminium	0.05	mg/L	-	0.07	0.07	0.07
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	2.2	2.2	2.3

Client Sample ID			QC250	SWL18-1	SWL18-2	SWL18-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No21239	M16-No21240	M16-No21241	M16-No21242
Date Sampled			Nov 23, 2016	Nov 23, 2016	Nov 23, 2016	Nov 23, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	0.71	0.74	0.71
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	0.12	0.12	0.12
Manganese (filtered)	0.005	mg/L	< 0.005	0.10	0.11	0.11
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	< 0.005	0.007	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	-	31	32	31
Magnesium	0.5	mg/L	-	71	71	71
Potassium	0.5	mg/L	-	9.5	10	10
Sodium	0.5	mg/L	-	460	460	460
Pathogens						
E.coli	1	MPN/100mL	-	85	95	150
Thermotolerant Coliforms	1	MPN/100mL	-	580	320	460

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 24, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 24, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 24, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 24, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 24, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 24, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 24, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 24, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 24, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 24, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 24, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 24, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 24, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 24, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 24, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 24, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 25, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 25, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 25, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Nov 24, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Nov 24, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Nov 24, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Nov 24, 2016 8:33 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 524859	Due: Dec 1, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Thermotolerant Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X									X	X	X											X	X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X							X	X			
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
External Laboratory																																													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																								
1	MW54	Nov 23, 2016		Water	M16-No21223	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW53	Nov 23, 2016		Water	M16-No21224	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	MW52	Nov 23, 2016		Water	M16-No21225	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW51	Nov 23, 2016		Water	M16-No21226	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW50	Nov 23, 2016		Water	M16-No21227	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	MW47	Nov 23, 2016		Water	M16-No21228	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	MW46	Nov 23, 2016		Water	M16-No21229	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	MW45	Nov 23, 2016		Water	M16-No21230	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	SWL20-1	Nov 23, 2016		Water	M16-No21231	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Nov 24, 2016 8:33 AM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	524859	Due:	Dec 1, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Thermotolerant Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X												X	X	X									X	X	X			
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X				
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	SWL20-2	Nov 23, 2016		Water	M16-No21232	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	SWL20-3	Nov 23, 2016		Water	M16-No21233	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL21-1	Nov 23, 2016		Water	M16-No21234	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL21-2	Nov 23, 2016		Water	M16-No21235	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL21-3	Nov 23, 2016		Water	M16-No21236	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	QC248	Nov 23, 2016		Water	M16-No21237	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	QC249	Nov 23, 2016		Water	M16-No21238			X	X	X			X			X		X		X	X	X	X	X	X	X	X				X							X						
17	QC250	Nov 23, 2016		Water	M16-No21239			X	X	X			X			X		X		X	X	X	X	X	X	X	X				X								X					
18	SWL18-1	Nov 23, 2016		Water	M16-No21240	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL18-2	Nov 23, 2016		Water	M16-No21241	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	SWL18-3	Nov 23, 2016		Water	M16-No21242	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts					18	18	20	18	20	18	20	18	18	20	18	18	20	9	18	20	18	20	18	20	18	20	18	20	18	18	18	18	20	18	9	18	9	18	20	18	18	18		

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	103		70-130	Pass	
Chloride	%	107		70-130	Pass	
Phosphate total (as P)	%	86		70-130	Pass	
Phosphorus reactive (as P)	%	109		70-130	Pass	
Sulphate (as S)	%	106		70-130	Pass	
Total Dissolved Solids	%	109		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	92		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	114		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	%	83		70-130	Pass	
Nitrate (as N)	%	83		70-130	Pass	
Nitrite (as N)	%	91		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	121		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	96		70-130	Pass	
Aluminium (filtered)	%	98		70-130	Pass	
Arsenic	%	105		70-130	Pass	
Arsenic (filtered)	%	107		70-130	Pass	
Cadmium	%	106		70-130	Pass	
Cadmium (filtered)	%	107		70-130	Pass	
Chromium	%	97		70-130	Pass	
Chromium (filtered)	%	108		70-130	Pass	
Copper	%	98		70-130	Pass	
Copper (filtered)	%	111		70-130	Pass	
Iron	%	99		70-130	Pass	
Iron (filtered)	%	109		70-130	Pass	
Lead	%	104		70-130	Pass	
Lead (filtered)	%	111		70-130	Pass	
Manganese	%	103		70-130	Pass	
Manganese (filtered)	%	109		70-130	Pass	
Mercury	%	116		70-130	Pass	
Mercury (filtered)	%	113		70-130	Pass	
Nickel	%	97		70-130	Pass	
Nickel (filtered)	%	108		70-130	Pass	
Selenium	%	112		70-130	Pass	
Selenium (filtered)	%	100		70-130	Pass	
Zinc	%	101		70-130	Pass	
Zinc (filtered)	%	107		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	96		70-130	Pass	
Magnesium	%	103		70-130	Pass	
Potassium	%	96		70-130	Pass	
Sodium	%	95		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	B16-No20318	NCP	%	85		70-130	Pass	
Sulphate (as S)	M16-No21577	NCP	%	98		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-No21577	NCP	%	124		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No20224	NCP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No20224	NCP	%	81		70-130	Pass	
Nitrate (as N)	M16-No20224	NCP	%	80		70-130	Pass	
Nitrite (as N)	M16-No20224	NCP	%	89		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	S16-No22160	NCP	%	95		70-130	Pass	
Aluminium (filtered)	S16-No21991	NCP	%	84		70-130	Pass	
Arsenic (filtered)	S16-No21991	NCP	%	110		70-130	Pass	
Cadmium (filtered)	S16-No21991	NCP	%	92		70-130	Pass	
Chromium (filtered)	S16-No21991	NCP	%	91		70-130	Pass	
Copper (filtered)	S16-No21991	NCP	%	91		70-130	Pass	
Lead (filtered)	S16-No21991	NCP	%	72		70-130	Pass	
Manganese (filtered)	M16-No20198	NCP	%	108		70-130	Pass	
Mercury (filtered)	S16-No21991	NCP	%	81		70-130	Pass	
Nickel (filtered)	S16-No21991	NCP	%	101		70-130	Pass	
Selenium (filtered)	S16-No21991	NCP	%	87		70-130	Pass	
Zinc (filtered)	S16-No21991	NCP	%	120		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-No21224	CP	%	129		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-No21224	CP	%	108		70-130	Pass	
Cadmium	M16-No21224	CP	%	105		70-130	Pass	
Chromium	M16-No21224	CP	%	100		70-130	Pass	
Copper	M16-No21224	CP	%	90		70-130	Pass	
Iron	M16-No21224	CP	%	106		70-130	Pass	
Lead	M16-No21224	CP	%	96		70-130	Pass	
Manganese	M16-No21224	CP	%	101		70-130	Pass	
Mercury	M16-No21224	CP	%	108		70-130	Pass	
Nickel	M16-No21224	CP	%	91		70-130	Pass	
Selenium	M16-No21224	CP	%	114		70-130	Pass	
Zinc	M16-No21224	CP	%	97		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-No21232	CP	%	97		70-130	Pass	
Magnesium	M16-No21232	CP	%	99		70-130	Pass	
Potassium	M16-No21232	CP	%	94		70-130	Pass	
Sodium	M16-No21232	CP	%	108		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-No21234	CP	%	78		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-No21223	CP	mg/L	10	< 10	6.0	30%	Pass	
Chloride	M16-No21147	NCP	mg/L	1300	1300	4.3	30%	Pass	
Conductivity (at 25°C)	M16-No21223	CP	uS/cm	1500	1500	2.0	30%	Pass	
pH	M16-No21223	CP	pH Units	6.9	6.9	pass	30%	Pass	
Phosphate total (as P)	M16-No21223	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as S)	M16-No21856	NCP	mg/L	64	63	1.6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-No21223	CP	mg/L	130	120	4.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No21223	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No21223	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No21223	CP	mg/L	130	120	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-No20224	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-No20224	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-No20224	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-No20224	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-No21223	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium (filtered)	M16-No20193	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-No21223	CP	mg/L	0.003	0.003	7.0	30%	Pass	
Arsenic (filtered)	S16-No21990	NCP	mg/L	0.002	0.002	<1	30%	Pass	
Cadmium	S16-No22159	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cadmium (filtered)	S16-No21990	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-No21223	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	S16-No21990	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-No21223	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S16-No21990	NCP	mg/L	0.003	0.003	9.0	30%	Pass	
Iron (filtered)	S16-No21990	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-No20193	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-No21223	CP	mg/L	0.041	0.041	1.0	30%	Pass	
Manganese (filtered)	S16-No21990	NCP	mg/L	0.058	0.056	3.0	30%	Pass	
Mercury	M16-No21223	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	S16-No21990	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-No21223	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	S16-No21990	NCP	mg/L	0.019	0.018	1.0	30%	Pass	
Selenium (filtered)	S16-No21990	NCP	mg/L	0.004	0.003	11	30%	Pass	
Zinc	M16-No21223	CP	mg/L	0.006	0.005	7.0	30%	Pass	
Zinc (filtered)	S16-No21990	NCP	mg/L	0.040	0.038	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-No21226	CP	uS/cm	4900	4400	16	30%	Pass	
pH	M16-No21226	CP	pH Units	6.0	6.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-No21226	CP	mg/L	21	< 20	17	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No21226	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No21226	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No21226	CP	mg/L	21	< 20	17	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-No21232	CP	mg/L	10	11	10	30%	Pass
Magnesium	M16-No21232	CP	mg/L	62	68	10	30%	Pass
Potassium	M16-No21232	CP	mg/L	9.7	11	9.0	30%	Pass
Sodium	M16-No21232	CP	mg/L	590	640	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No21233	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-No21233	CP	uS/cm	3600	4000	<1	30%	Pass
pH	M16-No21233	CP	pH Units	6.9	6.9	pass	30%	Pass
Phosphate total (as P)	M16-No21233	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus reactive (as P)	M16-No21233	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No21233	CP	mg/L	26	27	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No21233	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No21233	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No21233	CP	mg/L	26	27	3.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-No21233	CP	mg/L	1.2	1.2	4.8	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-No21233	CP	mg/L	0.07	0.07	3.0	30%	Pass
Arsenic	M16-No21233	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M16-No21233	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-No21233	CP	mg/L	2.9	3.1	8.0	30%	Pass
Lead	M16-No21233	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-No21233	CP	mg/L	0.009	0.009	7.0	30%	Pass
Mercury	M16-No21233	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-No21233	CP	mg/L	0.002	0.002	3.0	30%	Pass
Selenium	M16-No21233	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-No21234	CP	NTU	15	15	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No21236	CP	uS/cm	1600	1600	2.0	30%	Pass
pH	M16-No21236	CP	pH Units	7.6	7.6	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No21236	CP	mg/L	77	80	4.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No21236	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No21236	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No21236	CP	mg/L	77	80	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No21237	CP	uS/cm	8900	8500	4.0	30%	Pass
pH	M16-No21237	CP	pH Units	6.3	6.6	pass	30%	Pass
Total Dissolved Solids	M16-No21237	CP	mg/L	4900	5100	4.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No21237	CP	mg/L	39	37	5.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No21237	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No21237	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No21237	CP	mg/L	39	37	5.0	30%	Pass

Duplicate										
					Result 1	Result 2	RPD			
Total Dissolved Solids	M16-No21241	CP	mg/L		2100	2100	3.0	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPT04483AA MONITORING EVENT 12**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 25, 2016 8:39 AM**
Eurofins | mgt reference: **525120**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

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to Australian/national standards.

Attention: **Richelle Bunbury**

Report **525120-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA MONITORING EVENT 12
Received Date Nov 25, 2016

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-No23102	M16-No23111	M16-No23112	M16-No23113
Date Sampled			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	17	12	23	< 10
Chloride	1	mg/L	74	130	14	13
Conductivity (at 25°C)	1	uS/cm	400	550	72	130
pH	0.1	pH Units	7.0	5.4	5.1	6.6
Phosphate total (as P)	0.05	mg/L	1.1	0.87	0.72	0.13
Phosphorus reactive (as P)	0.05	mg/L	1.1	0.69	0.21	0.09
Sulphate (as S)	5	mg/L	< 5	5.8	< 5	< 5
Total Dissolved Solids	10	mg/L	250	390	^{Q19} 78	^{Q19} 110
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	69	52	< 20	22
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	69	52	< 20	22
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.38	0.61	0.38	0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	2.5
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	2.5
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.3	2.0	1.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.9	2.4	1.6
Total Nitrogen (as N)	0.2	mg/L	0.4	1.9	2.4	4.1
Heavy Metals						
Aluminium	0.05	mg/L	0.16	1.3	0.24	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	0.25	0.06	< 0.05
Arsenic	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.68	0.92	0.09	< 0.05
Iron (filtered)	0.05	mg/L	0.22	0.25	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW39 Water	MW38 Water	MW37 Water	MW36 Water
Sample Matrix			M16-No23102	M16-No23111	M16-No23112	M16-No23113
Eurofins mgt Sample No.			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.004	0.001	0.004	0.001
Selenium (filtered)	0.001	mg/L	0.004	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	0.014	0.061	0.009	0.005
Zinc (filtered)	0.005	mg/L	0.006	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	14	18	2.4	14
Magnesium	0.5	mg/L	6.3	9.2	0.9	2.0
Potassium	0.5	mg/L	18	16	0.9	< 0.5
Sodium	0.5	mg/L	46	61	18	12

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-No23114	M16-No23115	M16-No23116	M16-No23117
Eurofins mgt Sample No.			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	80	52	11	17
Chloride	1	mg/L	40	47	66	140
Conductivity (at 25°C)	1	uS/cm	200	200	350	530
pH	0.1	pH Units	4.2	5.6	7.2	6.4
Phosphate total (as P)	0.05	mg/L	1.1	1.8	0.10	0.74
Phosphorus reactive (as P)	0.05	mg/L	0.82	0.82	0.06	0.54
Sulphate (as S)	5	mg/L	< 5	8.5	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 360	^{Q19} 510	250	^{Q19} 400
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	21	73	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	21	73	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.36	0.34	0.39	0.34
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	4.7	4.9	0.9	1.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.1	5.2	1.3	2.1
Total Nitrogen (as N)	0.2	mg/L	5.1	5.2	1.3	2.1

Client Sample ID			MW35 Water	MW34 Water	MW33 Water	MW32 Water
Sample Matrix			M16-No23114	M16-No23115	M16-No23116	M16-No23117
Eurofins mgt Sample No.			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.52	1.4	0.41	0.58
Aluminium (filtered)	0.05	mg/L	0.34	0.93	0.34	0.32
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.001
Copper	0.001	mg/L	0.004	0.004	< 0.001	0.006
Copper (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Iron	0.05	mg/L	0.31	1.5	0.15	0.22
Iron (filtered)	0.05	mg/L	0.16	1.0	0.15	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.009	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.011
Zinc (filtered)	0.005	mg/L	< 0.005	0.032	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	5.8	10	24	8.1
Magnesium	0.5	mg/L	2.4	5.1	5.1	7.5
Potassium	0.5	mg/L	12	14	2.7	10
Sodium	0.5	mg/L	21	33	34	72

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL15-1 Water
Sample Matrix			M16-No23118	M16-No23119	M16-No23120	M16-No23121
Eurofins mgt Sample No.			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	70	< 10	36	20
Chloride	1	mg/L	71	31	53	78
Conductivity (at 25°C)	1	uS/cm	360	250	340	270
pH	0.1	pH Units	4.4	6.9	4.2	4.9
Phosphate total (as P)	0.05	mg/L	2.6	0.06	< 0.05	0.18
Phosphorus reactive (as P)	0.05	mg/L	2.1	< 0.05	< 0.05	0.10
Sulphate (as S)	5	mg/L	10	< 5	20	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 500	^{Q19} 200	^{Q19} 330	^{Q19} 280
Turbidity	1	NTU	-	-	-	7.0

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	SWL15-1 Water
Sample Matrix			M16-No23118	M16-No23119	M16-No23120	M16-No23121
Eurofins mgt Sample No.			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	51	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	51	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.46	0.04	0.18	0.06
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	3.7	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	3.7	< 0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	8.5	1.8	1.5	1.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	8.9	1.8	1.7	1.6
Total Nitrogen (as N)	0.2	mg/L	8.9	5.5	1.7	1.6
Heavy Metals						
Aluminium	0.05	mg/L	2.8	0.41	1.6	0.84
Aluminium (filtered)	0.05	mg/L	2.2	0.21	0.98	0.49
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.003	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	0.66	0.07	0.33	0.35
Iron (filtered)	0.05	mg/L	0.41	< 0.05	0.15	0.14
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	0.069	0.009	0.012
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	11	27	6.4	4.0
Magnesium	0.5	mg/L	5.5	2.6	11	5.7
Potassium	0.5	mg/L	8.3	0.6	2.1	0.9
Sodium	0.5	mg/L	42	21	32	40
Pathogens						
E.coli	1	MPN/100mL	-	-	-	M ¹⁵ <10
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	63

Client Sample ID			SWL15-2	SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No23122	M16-No23123	M16-No23124	M16-No23125
Date Sampled			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	22	< 10	< 10	< 10
Chloride	1	mg/L	77	100	82	97
Conductivity (at 25°C)	1	uS/cm	300	480	400	460
pH	0.1	pH Units	4.7	6.9	7.5	7.5
Phosphate total (as P)	0.05	mg/L	0.19	1.5	1.2	1.1
Phosphorus reactive (as P)	0.05	mg/L	0.10	0.75	0.90	0.66
Sulphate (as S)	5	mg/L	< 5	< 5	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 270	310	280	310
Turbidity	1	NTU	2.0	71	3.6	9.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	61	59	60
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	61	59	60
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.06	0.09	0.09	0.07
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.2	1.6	1.6	1.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.7	1.7	2.0
Total Nitrogen (as N)	0.2	mg/L	1.3	1.7	1.7	2.0
Heavy Metals						
Aluminium	0.05	mg/L	0.77	0.28	0.25	0.25
Aluminium (filtered)	0.05	mg/L	0.49	0.28	0.11	0.13
Arsenic	0.001	mg/L	< 0.001	0.002	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.31	2.3	1.6	1.6
Iron (filtered)	0.05	mg/L	0.14	1.0	0.51	0.61
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.052	0.015	0.016
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.010	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.40	0.007	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL15-2	SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No23122	M16-No23123	M16-No23124	M16-No23125
Date Sampled			Nov 24, 2016	Nov 24, 2016	Nov 24, 2016	Nov 24, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	4.0	19	17	17
Magnesium	0.5	mg/L	5.7	8.4	7.4	7.5
Potassium	0.5	mg/L	0.9	15	11	14
Sodium	0.5	mg/L	40	50	44	45
Pathogens						
E.coli	1	MPN/100mL	^{M15} <10	10	52	^{M15} <10
Thermotolerant Coliforms	1	MPN/100mL	75	31	170	110

Client Sample ID			QC251	QC252
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-No23126	M16-No23127
Date Sampled			Nov 24, 2016	Nov 24, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 25, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 25, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 25, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 25, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 25, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 25, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 25, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 25, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 25, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 25, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 25, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 25, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 25, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 25, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 25, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 25, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 28, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 28, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 28, 2016	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Nov 25, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Nov 25, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Nov 25, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Nov 25, 2016 8:39 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 525120	Due: Dec 2, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA MONITORING EVENT 12		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)						
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X											X	X	X				
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X							X	X						
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
External Laboratory																																																
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																											
1	MW39	Nov 24, 2016		Water	M16-No23102	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW38	Nov 24, 2016		Water	M16-No23111	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW37	Nov 24, 2016		Water	M16-No23112	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW36	Nov 24, 2016		Water	M16-No23113	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW35	Nov 24, 2016		Water	M16-No23114	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW34	Nov 24, 2016		Water	M16-No23115	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW33	Nov 24, 2016		Water	M16-No23116	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW32	Nov 24, 2016		Water	M16-No23117	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW31	Nov 24, 2016		Water	M16-No23118	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)						
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X												X	X	X													X	X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X											X	X		
Brisbane Laboratory - NATA Site # 20794																																																	
Perth Laboratory - NATA Site # 18217																																																	
10	MW30	Nov 24, 2016		Water	M16-No23119	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
11	MW29	Nov 24, 2016		Water	M16-No23120	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	SWL15-1	Nov 24, 2016		Water	M16-No23121	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	SWL15-2	Nov 24, 2016		Water	M16-No23122	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	SWL16-1	Nov 24, 2016		Water	M16-No23123	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15	SWL16-2	Nov 24, 2016		Water	M16-No23124	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16	SWL16-3	Nov 24, 2016		Water	M16-No23125	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17	QC251	Nov 24, 2016		Water	M16-No23126			X	X	X				X			X		X		X	X	X	X	X	X	X							X										X					
18	QC252	Nov 24, 2016		Water	M16-No23127			X	X	X				X			X		X		X	X	X	X	X	X	X							X											X				
Test Counts						16	16	18	16	18	16	18	16	16	18	16	16	18	5	16	18	16	18	16	18	16	18	16	18	16	18	16	16	16	16	16	18	16	5	16	5	16	18	16	16	16	16		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	98		70-130	Pass	
Chloride	%	117		70-130	Pass	
Phosphate total (as P)	%	87		70-130	Pass	
Phosphorus reactive (as P)	%	97		70-130	Pass	
Sulphate (as S)	%	116		70-130	Pass	
Total Dissolved Solids	%	96		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	98		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	103		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	%	93		70-130	Pass	
Nitrate (as N)	%	92		70-130	Pass	
Nitrite (as N)	%	95		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	71		70-130	Pass	
Total Nitrogen (as N)	%	71		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	108		70-130	Pass	
Aluminium (filtered)	%	112		70-130	Pass	
Arsenic	%	99		70-130	Pass	
Arsenic (filtered)	%	111		70-130	Pass	
Cadmium	%	98		70-130	Pass	
Cadmium (filtered)	%	108		70-130	Pass	
Chromium	%	100		70-130	Pass	
Chromium (filtered)	%	111		70-130	Pass	
Copper	%	101		70-130	Pass	
Copper (filtered)	%	114		70-130	Pass	
Iron	%	96		70-130	Pass	
Iron (filtered)	%	130		70-130	Pass	
Lead	%	100		70-130	Pass	
Lead (filtered)	%	113		70-130	Pass	
Manganese	%	101		70-130	Pass	
Manganese (filtered)	%	112		70-130	Pass	
Mercury	%	100		70-130	Pass	
Mercury (filtered)	%	111		70-130	Pass	
Nickel	%	100		70-130	Pass	
Nickel (filtered)	%	113		70-130	Pass	
Selenium	%	101		70-130	Pass	
Selenium (filtered)	%	107		70-130	Pass	
Zinc	%	103		70-130	Pass	
Zinc (filtered)	%	97		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	94		70-130	Pass	
Magnesium	%	98		70-130	Pass	
Potassium	%	89		70-130	Pass	
Sodium	%	86		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	A16-De00884	NCP	%	96		70-130	Pass	
Sulphate (as S)	M16-No23102	CP	%	125		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-No22559	NCP	%	73		70-130	Pass	
Carbonate Alkalinity (as CaCO3)	M16-No22550	NCP	%	110		70-130	Pass	
Total Alkalinity (as CaCO3)	M16-No22550	NCP	%	130		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-No22567	NCP	%	93		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No22567	NCP	%	91		70-130	Pass	
Nitrate (as N)	M16-No22567	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-No22567	NCP	%	97		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-No21224	NCP	%	129		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M16-No24388	NCP	%	117		70-130	Pass	
Arsenic (filtered)	M16-No24388	NCP	%	117		70-130	Pass	
Cadmium (filtered)	M16-No24388	NCP	%	117		70-130	Pass	
Chromium (filtered)	M16-No24388	NCP	%	114		70-130	Pass	
Copper (filtered)	M16-No24388	NCP	%	77		70-130	Pass	
Manganese (filtered)	M16-No24388	NCP	%	115		70-130	Pass	
Nickel (filtered)	M16-No24388	NCP	%	110		70-130	Pass	
Selenium (filtered)	M16-No24388	NCP	%	79		70-130	Pass	
Zinc	M16-No24388	NCP	%	98		70-130	Pass	
Zinc (filtered)	M16-No24388	NCP	%	122		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Magnesium	M16-No23030	NCP	%	110		70-130	Pass	
Potassium	M16-No23030	NCP	%	106		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-No23111	CP	%	104		70-130	Pass	
Cadmium	M16-No23111	CP	%	104		70-130	Pass	
Chromium	M16-No23111	CP	%	108		70-130	Pass	
Copper	M16-No23111	CP	%	103		70-130	Pass	
Iron	M16-No23111	CP	%	125		70-130	Pass	
Lead	M16-No23111	CP	%	104		70-130	Pass	
Manganese	M16-No23111	CP	%	101		70-130	Pass	
Mercury	M16-No23111	CP	%	106		70-130	Pass	
Nickel	M16-No23111	CP	%	104		70-130	Pass	
Selenium	M16-No23111	CP	%	107		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-No23114	CP	%	121		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M16-No23117	CP	%	73		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-No23119	CP	%	96		70-130	Pass	
Sodium	M16-No23119	CP	%	84		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-No23121	CP	%	102			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-No23122	CP	%	105			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-No23102	CP	mg/L	17	12	32	30%	Fail	Q15
pH	S16-No19820	NCP	pH Units	12	12	pass	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Ammonia (as N)	M16-No22567	NCP	mg/L	0.09	0.08	14	30%	Pass	
Nitrate & Nitrite (as N)	M16-No22567	NCP	mg/L	0.79	0.80	1.0	30%	Pass	
Nitrate (as N)	M16-No22567	NCP	mg/L	0.75	0.76	1.0	30%	Pass	
Nitrite (as N)	M16-No22567	NCP	mg/L	0.03	0.03	2.0	30%	Pass	
Total Nitrogen (as N)	M16-De00485	NCP	mg/L	240	230	2.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M16-No23102	CP	mg/L	0.16	0.15	7.0	30%	Pass	
Aluminium (filtered)	M16-No24387	NCP	mg/L	0.64	0.64	<1	30%	Pass	
Arsenic	M16-No25425	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-No23102	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-No23102	CP	mg/L	0.001	0.001	<1	30%	Pass	
Chromium (filtered)	M16-No24387	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M16-No25415	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-No23102	CP	mg/L	0.68	0.66	3.0	30%	Pass	
Iron (filtered)	M16-No24387	NCP	mg/L	2.3	2.4	5.0	30%	Pass	
Lead	M16-No24387	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-No23102	CP	mg/L	0.015	0.014	2.0	30%	Pass	
Manganese (filtered)	M16-No24387	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-No25425	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-No24387	NCP	mg/L	0.004	0.004	3.0	30%	Pass	
Zinc	M16-No24387	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M16-No24387	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-No23111	CP	uS/cm	550	540	2.0	30%	Pass	
pH	M16-No23111	CP	pH Units	5.4	5.5	pass	30%	Pass	
Phosphate total (as P)	M16-No23111	CP	mg/L	0.87	0.81	7.0	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-No23111	CP	mg/L	52	54	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No23111	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No23111	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No23111	CP	mg/L	52	54	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-No23111	CP	mg/L	1.9	3.0	44	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-No23113	CP	mg/L	13	13	<1	30%	Pass	
Sulphate (as S)	M16-No23113	CP	mg/L	< 5	< 5	<1	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-No23115	CP	mg/L	510	500	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No23116	CP	uS/cm	350	350	<1	30%	Pass
pH	M16-No23116	CP	pH Units	7.2	7.3	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No23116	CP	mg/L	73	75	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No23116	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No23116	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No23116	CP	mg/L	73	75	2.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-No23116	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Selenium (filtered)	M16-No23116	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-No23119	CP	mg/L	27	25	7.0	30%	Pass
Sodium	M16-No23119	CP	mg/L	21	18	15	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No23120	CP	mg/L	36	41	13	30%	Pass
Phosphate total (as P)	M16-No23120	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus reactive (as P)	M16-No23120	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-No23120	CP	mg/L	1.7	1.5	11	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-No23121	CP	mg/L	20	21	5.0	30%	Pass
Conductivity (at 25°C)	M16-No23121	CP	uS/cm	270	270	1.0	30%	Pass
pH	M16-No23121	CP	pH Units	4.9	4.8	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No23121	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No23121	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No23121	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No23121	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-No23125	CP	mg/L	97	97	<1	30%	Pass
Sulphate (as S)	M16-No23125	CP	mg/L	< 5	< 5	<1	30%	Pass
Total Dissolved Solids	M16-No23125	CP	mg/L	310	330	5.0	30%	Pass
Turbidity	M16-No23125	CP	NTU	9.8	10	3.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-No23126	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-No23126	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-No23126	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury (filtered)	M16-No23126	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-No23126	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-No23126	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPT04483AA MONITORING EVENT 12**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 28, 2016 8:13 AM**
Eurofins | mgt reference: **525325**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No MW14 received, but MW13 received. Placed MW13 for testing, please advise if this is incorrect.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **525325-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA MONITORING EVENT 12
Received Date Nov 28, 2016

Client Sample ID			MW27 Water	MW26 Water	MW25 Water	MW24 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-No24387	M16-No24388	M16-No24389	M16-No24390
Date Sampled			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	89	55	25	41
Chloride	1	mg/L	56	130	74	100
Conductivity (at 25°C)	1	uS/cm	480	500	360	520
pH	0.1	pH Units	3.5	3.8	5.2	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.06	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	79	62	51	51
Total Dissolved Solids	10	mg/L	^{Q19} 470	350	250	^{Q19} 350
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.16	< 0.01	0.17
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.56	7.1	6.4
Nitrate (as N)	0.02	mg/L	< 0.02	0.55	7.1	6.3
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	2.4	7.8	11
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	2.6	7.8	11
Total Nitrogen (as N)	0.2	mg/L	1.6	3.2	15	17
Heavy Metals						
Aluminium	0.05	mg/L	1.1	2.1	4.4	3.0
Aluminium (filtered)	0.05	mg/L	0.64	1.2	0.55	1.1
Arsenic	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.004	0.002	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	0.001	0.002	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.7	1.00	0.55	0.42
Iron (filtered)	0.05	mg/L	2.3	0.49	< 0.05	0.12
Lead	0.001	mg/L	< 0.001	0.001	0.004	< 0.001

Client Sample ID			MW27	MW26	MW25	MW24
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No24387	M16-No24388	M16-No24389	M16-No24390
Date Sampled			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.014	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0002	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.001	0.001	0.002
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.005	0.002	0.006	0.002
Selenium (filtered)	0.001	mg/L	0.003	0.001	0.005	0.002
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	1.9	8.2	5.0	3.8
Magnesium	0.5	mg/L	14	13	13	11
Potassium	0.5	mg/L	7.6	1.8	3.7	1.7
Sodium	0.5	mg/L	38	69	43	72

Client Sample ID			MW23	MW7	MW8	MW9
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No24391	M16-No24392	M16-No24393	M16-No24394
Date Sampled			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	35	22	< 10	15
Chloride	1	mg/L	87	24	11	13
Conductivity (at 25°C)	1	uS/cm	580	190	89	100
pH	0.1	pH Units	6.3	4.1	5.5	4.5
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	0.11	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	87	23	5.1	7.7
Total Dissolved Solids	10	mg/L	^{Q19} 410	^{Q19} 110	^{Q19} 96	^{Q19} 83
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	45	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	45	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.24	< 0.01	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	5.8	1.7	3.4	1.2
Nitrate (as N)	0.02	mg/L	5.6	1.7	3.4	1.2
Nitrite (as N)	0.02	mg/L	0.17	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	5.5	2.0	3.6	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.7	2.2	3.6	1.2
Total Nitrogen (as N)	0.2	mg/L	12	3.9	7.0	2.4

Client Sample ID			MW23 Water	MW7 Water	MW8 Water	MW9 Water
Sample Matrix			M16-No24391	M16-No24392	M16-No24393	M16-No24394
Eurofins mgt Sample No.			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.36	0.83	1.4	3.0
Aluminium (filtered)	0.05	mg/L	0.12	0.20	0.12	0.37
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	2.6	0.15	3.9
Iron (filtered)	0.05	mg/L	< 0.05	0.17	< 0.05	0.53
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	48	5.7	8.3	2.3
Magnesium	0.5	mg/L	7.6	2.3	0.9	1.0
Potassium	0.5	mg/L	11	1.8	< 0.5	< 0.5
Sodium	0.5	mg/L	44	15	4.9	10

Client Sample ID			MW10 Water	MW11 Water	MW12 Water	MW15 Water
Sample Matrix			M16-No24395	M16-No24396	M16-No24397	M16-No24398
Eurofins mgt Sample No.			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	29	11	18
Chloride	1	mg/L	12	44	36	41
Conductivity (at 25°C)	1	uS/cm	270	240	190	280
pH	0.1	pH Units	6.7	4.3	4.6	4.7
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	20	23	15	54
Total Dissolved Solids	10	mg/L	^{Q19} 220	150	^{Q19} 120	^{Q19} 200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	85	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	85	< 20	< 20	< 20

Client Sample ID			MW10 Water	MW11 Water	MW12 Water	MW15 Water
Sample Matrix			M16-No24395	M16-No24396	M16-No24397	M16-No24398
Eurofins mgt Sample No.			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	0.17
Nitrate & Nitrite (as N)	0.05	mg/L	3.6	2.4	1.1	0.06
Nitrate (as N)	0.02	mg/L	3.6	2.4	1.1	0.06
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	6.4	0.5	< 0.2	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.4	0.5	< 0.2	0.6
Total Nitrogen (as N)	0.2	mg/L	10	2.9	1.1	0.7
Heavy Metals						
Aluminium	0.05	mg/L	1.2	3.1	2.8	0.42
Aluminium (filtered)	0.05	mg/L	0.18	1.3	1.2	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.96	0.34	1.2	2.8
Iron (filtered)	0.05	mg/L	0.14	0.13	0.16	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.003	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	0.004	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.003	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	44	0.7	0.8	8.7
Magnesium	0.5	mg/L	3.8	2.7	4.5	8.6
Potassium	0.5	mg/L	0.8	< 0.5	< 0.5	3.1
Sodium	0.5	mg/L	8.6	15	28	32

Client Sample ID			QC253	QC254	MW13
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-No24399	M16-No24400	M16-No24416
Date Sampled			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	-	-	40
Chloride	1	mg/L	-	-	67
Conductivity (at 25°C)	1	uS/cm	-	-	350
pH	0.1	pH Units	-	-	4.1
Phosphate total (as P)	0.05	mg/L	-	-	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	-	< 0.05
Sulphate (as SO ₄)	5	mg/L	-	-	41
Total Dissolved Solids	10	mg/L	-	-	^{Q19} 240
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	-	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	-	< 20
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	-	-	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	0.50
Nitrate (as N)	0.02	mg/L	-	-	0.49
Nitrite (as N)	0.02	mg/L	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	-	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	0.5
Total Nitrogen (as N)	0.2	mg/L	-	-	1.0
Heavy Metals					
Aluminium	0.05	mg/L	-	-	6.5
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	2.0
Arsenic	0.001	mg/L	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	-	-	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	6.2
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.54
Lead	0.001	mg/L	-	-	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.005

Client Sample ID			QC253	QC254	MW13
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-No24399	M16-No24400	M16-No24416
Date Sampled			Nov 25, 2016	Nov 25, 2016	Nov 25, 2016
Test/Reference	LOR	Unit			
Alkali Metals					
Calcium	0.5	mg/L	-	-	2.2
Magnesium	0.5	mg/L	-	-	7.1
Potassium	0.5	mg/L	-	-	0.9
Sodium	0.5	mg/L	-	-	41

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 05, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 28, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 28, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 28, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Nov 28, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 28, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 28, 2016	14 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 05, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 05, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 29, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 29, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 29, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 28, 2016	28 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 28, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 05, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 05, 2016	7 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 29, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 05, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 05, 2016	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Nov 28, 2016 8:13 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 525325	Due: Dec 5, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA MONITORING EVENT 12		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Eurofins mgt Suite B11	Total Nitrogen Set (as N)	Alkalinity (speciated)	Zinc (filtered)	Total Dissolved Solids	Selenium (filtered)	Phosphorus reactive (as P)	Phosphate total (as P)	pH	Nitrite (as N)	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Lead (filtered)	Lead	Iron (filtered)	Iron	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium												
Melbourne Laboratory - NATA Site # 1254 & 14271														X	X	X	X										X										X	X	X									
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
External Laboratory																																																
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																											
1	MW27	Nov 25, 2016		Water	M16-No24387	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
2	MW26	Nov 25, 2016		Water	M16-No24388	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	MW25	Nov 25, 2016		Water	M16-No24389	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW24	Nov 25, 2016		Water	M16-No24390	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW23	Nov 25, 2016		Water	M16-No24391	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	MW7	Nov 25, 2016		Water	M16-No24392	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	MW8	Nov 25, 2016		Water	M16-No24393	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	MW9	Nov 25, 2016		Water	M16-No24394	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9	MW10	Nov 25, 2016		Water	M16-No24395	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Nov 28, 2016 8:13 AM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	525325	Due:	Dec 5, 2016
Project Name:	NL_BASELINE GW_SW MONITORING LABORATORY	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPT04483AA MONITORING EVENT 12	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt					

Sample Detail						Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	Nitrite (as N)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Total Nitrogen Set (as N)	Eurofins mgt Suite B11		
Melbourne Laboratory - NATA Site # 1254 & 14271														X													X	X	X	X						X	X	X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X					X	X		X	X			X	
Brisbane Laboratory - NATA Site # 20794																																								
Perth Laboratory - NATA Site # 18217																																								
10	MW11	Nov 25, 2016		Water	M16-No24396	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW12	Nov 25, 2016		Water	M16-No24397	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	MW15	Nov 25, 2016		Water	M16-No24398	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	QC253	Nov 25, 2016		Water	M16-No24399		X		X		X		X		X		X		X		X		X		X					X			X							
14	QC254	Nov 25, 2016		Water	M16-No24400		X		X		X		X		X		X		X		X		X		X					X			X							
15	MW13	Nov 25, 2016		Water	M16-No24416	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Test Counts						13	15	13	15	13	15	13	15	13	13	15	13	15	13	15	13	15	13	15	13	15	13	13	13	13	13	13	15	13	13	15	13	13		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	108			70-130	Pass	
Chloride	%	128			70-130	Pass	
Phosphate total (as P)	%	101			70-130	Pass	
Phosphorus reactive (as P)	%	101			70-130	Pass	
Sulphate (as SO ₄)	%	123			70-130	Pass	
Total Dissolved Solids	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	105			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	111			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	%	94			70-130	Pass	
Nitrate (as N)	%	94			70-130	Pass	
Nitrite (as N)	%	97			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	90			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	104			70-130	Pass	
Aluminium (filtered)	%	111			70-130	Pass	
Arsenic	%	102			70-130	Pass	
Arsenic (filtered)	%	111			70-130	Pass	
Cadmium	%	100			70-130	Pass	
Cadmium (filtered)	%	110			70-130	Pass	
Chromium	%	100			70-130	Pass	
Chromium (filtered)	%	113			70-130	Pass	
Copper	%	100			70-130	Pass	
Copper (filtered)	%	116			70-130	Pass	
Iron	%	95			70-130	Pass	
Iron (filtered)	%	113			70-130	Pass	
Lead	%	100			70-130	Pass	
Lead (filtered)	%	124			70-130	Pass	
Manganese	%	99			70-130	Pass	
Manganese (filtered)	%	111			70-130	Pass	
Mercury	%	100			70-130	Pass	
Mercury (filtered)	%	93			70-130	Pass	
Nickel	%	99			70-130	Pass	
Nickel (filtered)	%	114			70-130	Pass	
Selenium	%	98			70-130	Pass	
Selenium (filtered)	%	99			70-130	Pass	
Zinc	%	100			70-130	Pass	
Zinc (filtered)	%	125			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	93			70-130	Pass	
Magnesium	%	99			70-130	Pass	
Potassium	%	92			70-130	Pass	
Sodium	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chloride	M16-No23114	NCP	%	121			70-130	Pass	
Phosphorus reactive (as P)	M16-No23122	NCP	%	105			70-130	Pass	
Sulphate (as SO4)	M16-No22901	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO3)	M16-No24370	NCP	%	93			70-130	Pass	
Total Alkalinity (as CaCO3)	M16-No24055	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M16-No24388	CP	%	117			70-130	Pass	
Arsenic	M16-No24388	CP	%	103			70-130	Pass	
Arsenic (filtered)	M16-No24388	CP	%	117			70-130	Pass	
Cadmium	M16-No24388	CP	%	103			70-130	Pass	
Cadmium (filtered)	M16-No24388	CP	%	117			70-130	Pass	
Chromium	M16-No24388	CP	%	106			70-130	Pass	
Chromium (filtered)	M16-No24388	CP	%	114			70-130	Pass	
Copper	M16-No24388	CP	%	105			70-130	Pass	
Copper (filtered)	M16-No24388	CP	%	77			70-130	Pass	
Iron	M16-No24388	CP	%	100			70-130	Pass	
Lead	M16-No24388	CP	%	103			70-130	Pass	
Manganese	M16-No24388	CP	%	104			70-130	Pass	
Manganese (filtered)	M16-No24388	CP	%	115			70-130	Pass	
Mercury	M16-No24388	CP	%	110			70-130	Pass	
Nickel	M16-No24388	CP	%	105			70-130	Pass	
Nickel (filtered)	M16-No24388	CP	%	110			70-130	Pass	
Selenium	M16-No24388	CP	%	109			70-130	Pass	
Selenium (filtered)	M16-No24388	CP	%	79			70-130	Pass	
Zinc	M16-No24388	CP	%	98			70-130	Pass	
Zinc (filtered)	M16-No24388	CP	%	122			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M16-No24388	CP	%	91			70-130	Pass	
Magnesium	M16-No24388	CP	%	104			70-130	Pass	
Potassium	M16-No24388	CP	%	103			70-130	Pass	
Sodium	M16-No24388	CP	%	76			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-No24392	CP	%	87			70-130	Pass	
Nitrate & Nitrite (as N)	M16-No24392	CP	%	82			70-130	Pass	
Nitrate (as N)	M16-No24392	CP	%	81			70-130	Pass	
Nitrite (as N)	M16-No24392	CP	%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	B16-No26894	NCP	mg/L	110	100	5.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-No24387	CP	mg/L	1.1	1.1	1.0	30%	Pass	
Aluminium (filtered)	M16-No24387	CP	mg/L	0.64	0.64	<1	30%	Pass	
Arsenic	M16-No25425	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	M16-No23126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-No23102	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Cadmium (filtered)	M16-No23116	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	M16-No24387	CP	mg/L	0.002	0.002	3.0	30%	Pass
Chromium (filtered)	M16-No24387	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-No25415	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-No24387	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-No24387	CP	mg/L	4.7	4.8	2.0	30%	Pass
Iron (filtered)	M16-No24387	CP	mg/L	2.3	2.4	5.0	30%	Pass
Lead	M16-No24387	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-No24387	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-No24387	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	M16-No24387	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-No25425	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-No24387	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-No24387	CP	mg/L	0.004	0.004	3.0	30%	Pass
Nickel (filtered)	M16-No24387	CP	mg/L	0.002	0.002	9.0	30%	Pass
Selenium (filtered)	M16-No23126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-No24387	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Zinc (filtered)	M16-No24387	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-No24387	CP	mg/L	1.9	1.9	<1	30%	Pass
Magnesium	M16-No24387	CP	mg/L	14	14	2.0	30%	Pass
Potassium	M16-No24387	CP	mg/L	7.6	7.9	5.0	30%	Pass
Sodium	M16-No24387	CP	mg/L	38	38	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-No24388	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus reactive (as P)	M16-No24388	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-No24388	CP	mg/L	2.6	2.4	5.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M16-No24389	CP	mg/L	250	260	4.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No24392	CP	mg/L	0.24	0.23	6.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No24392	CP	mg/L	1.7	1.7	<1	30%	Pass
Nitrate (as N)	M16-No24392	CP	mg/L	1.7	1.7	<1	30%	Pass
Nitrite (as N)	M16-No24392	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No24395	CP	uS/cm	270	270	1.0	30%	Pass
pH	M16-No24395	CP	pH Units	6.7	6.8	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-No24395	CP	mg/L	85	87	2.0	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-No24395	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-No24395	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-No24395	CP	mg/L	85	87	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-No24398	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-No24398	CP	mg/L	0.6	0.6	8.9	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-No24416	CP	mg/L	67	69	3.8	30%	Pass
Sulphate (as SO ₄)	M16-No24416	CP	mg/L	41	40	<1	30%	Pass
Total Dissolved Solids	M16-No24416	CP	mg/L	240	240	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPT04483AA MONITORING EVENT 12**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 29, 2016 8:22 AM**
Eurofins | mgt reference: **525468**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **525468-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA MONITORING EVENT 12
Received Date Nov 29, 2016

Client Sample ID			MW14 Water	MW16 Water	MW17 Water	MW18 Water
Sample Matrix						
Eurofins mgt Sample No.			M16-No25415	M16-No25416	M16-No25417	M16-No25418
Date Sampled			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	16	35	36	24
Chloride	1	mg/L	33	85	50	57
Conductivity (at 25°C)	1	uS/cm	200	400	240	280
pH	0.1	pH Units	4.3	4.4	4.2	4.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	28	55	43	34
Total Dissolved Solids	10	mg/L	^{Q19} 140	^{Q19} 290	^{Q19} 180	190
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.10	0.18	0.04	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	1.4	3.0	0.12	1.3
Nitrate (as N)	0.02	mg/L	1.4	3.0	0.12	1.3
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.3	0.7	0.3	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	0.9	0.3	0.3
Total Nitrogen (as N)	0.2	mg/L	1.4	1.1	0.37	1.6
Heavy Metals						
Aluminium	0.05	mg/L	2.2	5.2	1.7	4.2
Aluminium (filtered)	0.05	mg/L	0.26	2.3	0.52	0.25
Arsenic	0.001	mg/L	0.001	< 0.001	0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.004	0.005	0.004	0.006
Chromium (filtered)	0.001	mg/L	0.002	0.003	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.64	0.59	2.8	4.4
Iron (filtered)	0.05	mg/L	0.10	0.20	0.80	0.62
Lead	0.001	mg/L	0.002	0.015	0.003	0.003

Client Sample ID			MW14 Water	MW16 Water	MW17 Water	MW18 Water
Sample Matrix			M16-No25415	M16-No25416	M16-No25417	M16-No25418
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.005	0.002	0.005	0.001
Selenium (filtered)	0.001	mg/L	0.003	< 0.001	0.005	0.002
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	4.6	12	3.4	3.0
Magnesium	0.5	mg/L	4.1	9.4	3.7	6.3
Potassium	0.5	mg/L	< 0.5	1.5	0.8	1.4
Sodium	0.5	mg/L	16	51	24	38

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW22 Water
Sample Matrix			M16-No25419	M16-No25420	M16-No25421	M16-No25422
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	320	56	74	100
Chloride	1	mg/L	130	44	81	90
Conductivity (at 25°C)	1	uS/cm	640	270	450	690
pH	0.1	pH Units	3.4	4.2	4.2	3.7
Phosphate total (as P)	0.05	mg/L	0.10	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	95	44	72	180
Total Dissolved Solids	10	mg/L	^{Q19} 440	^{Q19} 170	^{Q19} 300	440
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	0.04	0.14	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	0.71	2.2	0.97	0.06
Nitrate (as N)	0.02	mg/L	0.71	2.2	0.96	0.06
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.8	0.4	0.7	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.9	0.4	0.8	0.6
Total Nitrogen (as N)	0.2	mg/L	3.6	2.6	1.7	0.63

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW22 Water
Sample Matrix			M16-No25419	M16-No25420	M16-No25421	M16-No25422
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	34	8.3	7.1	2.3
Aluminium (filtered)	0.05	mg/L	21	6.3	5.0	1.6
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.024	0.002	0.001	0.004
Chromium (filtered)	0.001	mg/L	0.005	0.001	< 0.001	0.003
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.26	0.56	13	8.5
Iron (filtered)	0.05	mg/L	< 0.05	0.27	12	6.4
Lead	0.001	mg/L	0.018	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.009	0.006	0.005	0.009
Nickel (filtered)	0.001	mg/L	0.007	0.005	0.004	0.007
Selenium	0.001	mg/L	0.003	< 0.001	< 0.001	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	1.1	< 0.5	3.4	37
Magnesium	0.5	mg/L	3.8	2.8	5.9	14
Potassium	0.5	mg/L	< 0.5	< 0.5	1.4	< 0.5
Sodium	0.5	mg/L	64	25	41	53

Client Sample ID			MW48 Water	MW49 Water	SWL19-1 Water	SWL19-2 Water
Sample Matrix			M16-No25423	M16-No25424	M16-No25425	M16-No25426
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	51	27	< 10	< 10
Chloride	1	mg/L	740	1400	1300	1300
Conductivity (at 25°C)	1	uS/cm	2900	5000	3800	3800
pH	0.1	pH Units	4.5	5.2	6.3	6.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	130	240	140	140
Total Dissolved Solids	10	mg/L	1700	2800	2600	2600
Turbidity	1	NTU	-	-	7.7	3.2

Client Sample ID			MW48	MW49	SWL19-1	SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No25423	M16-No25424	M16-No25425	M16-No25426
Date Sampled			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	0.02	< 0.01	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.3
Heavy Metals						
Aluminium	0.05	mg/L	1.6	1.0	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.12	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00016	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.00005	mg/L	0.00017	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.007	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.77	0.82	0.08	0.08
Iron (filtered)	0.05	mg/L	0.10	0.31	< 0.05	< 0.05
Lead	0.001	mg/L	0.009	0.15	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Manganese	0.005	mg/L	0.024	0.014	0.016	0.017
Manganese (filtered)	0.005	mg/L	0.022	0.013	0.015	0.014
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.012	0.005	0.001	0.001
Nickel (filtered)	0.001	mg/L	0.008	0.003	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.016	0.038	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.008	0.025	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	11	24	13	13
Magnesium	0.5	mg/L	65	140	95	93
Potassium	0.5	mg/L	10	13	7.0	6.7
Sodium	0.5	mg/L	470	790	730	700
Pathogens						
E.coli	1	MPN/100mL	-	-	20	<10
Thermotolerant Coliforms	1	MPN/100mL	-	-	120	85

Client Sample ID			SWL19-3	SWL5-1	QC257	QC255
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No25427	M16-No25428	M16-No25429	M16-No25430
Date Sampled			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	22	-
Chloride	1	mg/L	1200	38	53	-
Conductivity (at 25°C)	1	uS/cm	3700	190	310	-
pH	0.1	pH Units	6.1	5.3	4.3	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as SO ₄)	5	mg/L	140	14	31	-
Total Dissolved Solids	10	mg/L	2500	160	^{Q19} 170	-
Turbidity	1	NTU	13	4.2	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.03	0.07	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	1.3	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	1.3	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.8	1.0	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.8	1.1	-
Total Nitrogen (as N)	0.2	mg/L	0.2	0.79	2.4	-
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	0.84	6.1	-
Aluminium (filtered)	0.05	mg/L	< 0.05	0.46	0.21	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	-
Cadmium (filtered)	0.00005	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.001	0.002	0.008	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.51	6.0	-
Iron (filtered)	0.05	mg/L	< 0.05	0.21	0.49	< 0.05
Lead	0.001	mg/L	0.006	< 0.001	0.004	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	0.006	< 0.005	-
Manganese (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.002	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	< 0.005	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL19-3	SWL5-1	QC257	QC255
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No25427	M16-No25428	M16-No25429	M16-No25430
Date Sampled			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	12	6.9	3.2	-
Magnesium	0.5	mg/L	93	3.6	6.3	-
Potassium	0.5	mg/L	7.0	< 0.5	1.3	-
Sodium	0.5	mg/L	670	21	38	-
Pathogens						
E.coli	1	MPN/100mL	<10	74	-	-
Thermotolerant Coliforms	1	MPN/100mL	370	270	-	-

Client Sample ID			QC256
Sample Matrix			Water
Eurofins mgt Sample No.			M16-No25431
Date Sampled			Nov 28, 2016
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium (filtered)	0.05	mg/L	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 29, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 29, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 29, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 29, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 29, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 29, 2016	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 29, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 29, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 30, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 29, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 06, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 06, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 06, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 06, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 30, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Nov 30, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Nov 30, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Nov 30, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Nov 29, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Nov 29, 2016	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 06, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 06, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	91			70-130	Pass	
Chloride	%	120			70-130	Pass	
Phosphate total (as P)	%	96			70-130	Pass	
Phosphorus reactive (as P)	%	108			70-130	Pass	
Sulphate (as SO ₄)	%	128			70-130	Pass	
Total Dissolved Solids	%	99			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	110			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	112			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	90			70-130	Pass	
Nitrate & Nitrite (as N)	%	95			70-130	Pass	
Nitrate (as N)	%	95			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	83			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	104			70-130	Pass	
Aluminium (filtered)	%	111			70-130	Pass	
Arsenic	%	102			70-130	Pass	
Arsenic (filtered)	%	111			70-130	Pass	
Cadmium	%	100			70-130	Pass	
Cadmium (filtered)	%	110			70-130	Pass	
Chromium	%	100			70-130	Pass	
Chromium (filtered)	%	113			70-130	Pass	
Copper	%	100			70-130	Pass	
Copper (filtered)	%	116			70-130	Pass	
Iron	%	95			70-130	Pass	
Iron (filtered)	%	113			70-130	Pass	
Lead	%	100			70-130	Pass	
Lead (filtered)	%	124			70-130	Pass	
Manganese	%	99			70-130	Pass	
Manganese (filtered)	%	111			70-130	Pass	
Mercury	%	100			70-130	Pass	
Mercury (filtered)	%	93			70-130	Pass	
Nickel	%	99			70-130	Pass	
Nickel (filtered)	%	114			70-130	Pass	
Selenium	%	98			70-130	Pass	
Selenium (filtered)	%	99			70-130	Pass	
Zinc	%	100			70-130	Pass	
Zinc (filtered)	%	125			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	90			70-130	Pass	
Magnesium	%	102			70-130	Pass	
Potassium	%	92			70-130	Pass	
Sodium	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as SO ₄)	B16-No22890	NCP	%	113		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-No25415	CP	%	112		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-No24055	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-No24388	NCP	%	117		70-130	Pass	
Arsenic (filtered)	M16-No24388	NCP	%	117		70-130	Pass	
Cadmium (filtered)	M16-No24388	NCP	%	117		70-130	Pass	
Chromium (filtered)	M16-No24388	NCP	%	114		70-130	Pass	
Copper (filtered)	M16-No24388	NCP	%	77		70-130	Pass	
Manganese (filtered)	M16-No24388	NCP	%	115		70-130	Pass	
Nickel (filtered)	M16-No24388	NCP	%	110		70-130	Pass	
Selenium (filtered)	M16-No24388	NCP	%	79		70-130	Pass	
Zinc (filtered)	M16-No24388	NCP	%	122		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No25416	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No25416	CP	%	81		70-130	Pass	
Nitrate (as N)	M16-No25416	CP	%	81		70-130	Pass	
Nitrite (as N)	M16-No25416	CP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M16-No25416	CP	%	102		70-130	Pass	
Cadmium	M16-No25416	CP	%	98		70-130	Pass	
Chromium	M16-No25416	CP	%	102		70-130	Pass	
Copper	M16-No25416	CP	%	100		70-130	Pass	
Iron	M16-No25416	CP	%	96		70-130	Pass	
Lead	M16-No25416	CP	%	98		70-130	Pass	
Manganese	M16-No25416	CP	%	100		70-130	Pass	
Mercury	M16-No25416	CP	%	100		70-130	Pass	
Nickel	M16-No25416	CP	%	100		70-130	Pass	
Selenium	M16-No25416	CP	%	96		70-130	Pass	
Zinc	M16-No25416	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-No25416	CP	%	88		70-130	Pass	
Magnesium	M16-No25416	CP	%	104		70-130	Pass	
Potassium	M16-No25416	CP	%	95		70-130	Pass	
Sodium	M16-No25416	CP	%	91		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-No25417	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No25417	CP	%	93		70-130	Pass	
Nitrate (as N)	M16-No25417	CP	%	93		70-130	Pass	
Nitrite (as N)	M16-No25417	CP	%	96		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-No25420	CP	%	103		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ammonia (as N)	M16-No25420	CP	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	M16-No25420	CP	%	85			70-130	Pass	
Nitrate (as N)	M16-No25420	CP	%	85			70-130	Pass	
Nitrite (as N)	M16-No25420	CP	%	97			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-No25422	CP	%	103			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M16-No25425	CP	%	121			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-No25426	CP	%	99			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-No25415	CP	mg/L	16	18	17	30%	Pass	
Total Dissolved Solids	M16-No25415	CP	mg/L	140	170	18	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-No26820	NCP	mg/L	1.3	1.0	2.6	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-No25415	CP	mg/L	2.2	2.3	5.0	30%	Pass	
Aluminium (filtered)	M16-No25415	CP	mg/L	0.26	0.28	9.0	30%	Pass	
Arsenic (filtered)	M16-No23126	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-No25415	CP	mg/L	< 0.0002	< 0.00005	<1	30%	Pass	
Chromium	M16-No25415	CP	mg/L	0.004	0.004	8.0	30%	Pass	
Chromium (filtered)	M16-No25415	CP	mg/L	0.002	0.002	1.0	30%	Pass	
Copper	M16-No25415	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-No25415	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-No25415	CP	mg/L	0.64	0.67	5.0	30%	Pass	
Lead	M16-No25415	CP	mg/L	0.002	0.003	10	30%	Pass	
Mercury (filtered)	M16-No24387	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-No25415	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-No24387	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M16-No25415	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-No25415	CP	mg/L	4.6	4.7	3.0	30%	Pass	
Magnesium	M16-No25415	CP	mg/L	4.1	4.4	8.0	30%	Pass	
Potassium	M16-No25415	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M16-No25415	CP	mg/L	16	17	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-No25416	CP	uS/cm	400	450	2.0	30%	Pass	
pH	M16-No25416	CP	pH Units	4.4	4.5	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-No25416	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-No25416	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-No25416	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-No25416	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No25416	CP	mg/L	0.18	0.20	14	30%	Pass
Nitrate & Nitrite (as N)	M16-No25416	CP	mg/L	3.0	3.0	<1	30%	Pass
Nitrate (as N)	M16-No25416	CP	mg/L	3.0	3.0	<1	30%	Pass
Nitrite (as N)	M16-No25416	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No25417	CP	mg/L	0.04	0.04	7.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No25417	CP	mg/L	0.12	0.12	2.0	30%	Pass
Nitrate (as N)	M16-No25417	CP	mg/L	0.12	0.12	2.0	30%	Pass
Nitrite (as N)	M16-No25417	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No25420	CP	mg/L	0.04	0.04	2.0	30%	Pass
Nitrate & Nitrite (as N)	M16-No25420	CP	mg/L	2.2	2.2	<1	30%	Pass
Nitrate (as N)	M16-No25420	CP	mg/L	2.2	2.2	<1	30%	Pass
Nitrite (as N)	M16-No25420	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-No25421	CP	mg/L	81	82	2.0	30%	Pass
Conductivity (at 25°C)	M16-No25421	CP	uS/cm	450	450	<1	30%	Pass
pH	M16-No25421	CP	pH Units	4.2	4.3	pass	30%	Pass
Sulphate (as SO4)	M16-No25421	CP	mg/L	72	71	1.6	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-No25421	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-No25421	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-No25421	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-No25421	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-No25421	CP	mg/L	0.14	0.13	10	30%	Pass
Nitrate & Nitrite (as N)	M16-No25421	CP	mg/L	0.97	0.98	1.0	30%	Pass
Nitrate (as N)	M16-No25421	CP	mg/L	0.96	0.97	1.0	30%	Pass
Nitrite (as N)	M16-No25421	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-No25424	CP	mg/L	27	23	17	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-No25425	CP	mg/L	< 10	< 10	<1	30%	Pass
Phosphorus reactive (as P)	M16-No25425	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-No25425	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-No25425	CP	mg/L	< 0.0002	< 0.00005	<1	30%	Pass
Cadmium (filtered)	M16-No25425	CP	mg/L	< 0.0002	< 0.00005	<1	30%	Pass
Chromium	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-No25425	CP	mg/L	0.08	0.08	1.0	30%	Pass
Iron (filtered)	M16-No25425	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead (filtered)	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-No25425	CP	mg/L	0.016	0.016	1.0	30%	Pass
Manganese (filtered)	M16-No25425	CP	mg/L	0.015	0.014	<1	30%	Pass
Mercury	M16-No25425	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-No25425	CP	mg/L	0.001	0.001	8.0	30%	Pass
Nickel (filtered)	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium (filtered)	M16-No25425	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-No25425	CP	mg/L	13	13	<1	30%	Pass
Magnesium	M16-No25425	CP	mg/L	95	93	2.0	30%	Pass
Potassium	M16-No25425	CP	mg/L	7.0	6.9	2.0	30%	Pass
Sodium	M16-No25425	CP	mg/L	730	730	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-No25426	CP	uS/cm	3800	4500	<1	30%	Pass
pH	M16-No25426	CP	pH Units	6.2	6.2	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-No25426	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-No25426	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-No25426	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-No25426	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M16-No25427	CP	NTU	13	13	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPE04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Nov 30, 2016 8:26 AM**
Eurofins | mgt reference: **525644**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **525644-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPE04483AA**
 Received Date **Nov 30, 2016**

Client Sample ID			MW44	MW43	MW42	MW41
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-No26820	M16-No26821	M16-No26822	M16-No26823
Date Sampled			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	19	44	35	140
Chloride	1	mg/L	380	1200	51	160
Conductivity (at 25°C)	1	uS/cm	1400	3900	200	580
pH	0.1	pH Units	7.3	6.6	4.3	3.7
Phosphate total (as P)	0.05	mg/L	0.18	0.49	< 0.05	0.99
Phosphorus reactive (as P)	0.05	mg/L	0.13	< 0.05	< 0.05	0.83
Sulphate (as S)	5	mg/L	< 5	15	< 5	14
Total Dissolved Solids	10	mg/L	^{Q19} 1200	^{Q19} 3700	^{Q19} 200	^{Q19} 790
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	230	160	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	230	160	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.34	1.0	0.35	0.33
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	5.2	0.5	5.8
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	6.2	0.9	6.1
Total Nitrogen (as N)	0.2	mg/L	1.3	6.2	0.9	6.1
Heavy Metals						
Aluminium	0.05	mg/L	1.8	1.8	0.37	2.6
Aluminium (filtered)	0.05	mg/L	0.06	0.99	0.16	1.9
Arsenic	0.001	mg/L	0.003	0.004	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00005	0.00006	0.00033
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00005	0.00006	0.00026
Chromium	0.001	mg/L	0.009	0.013	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	0.003	0.008	< 0.001	0.003
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.014
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.009
Iron	0.05	mg/L	0.85	0.12	0.16	1.9
Iron (filtered)	0.05	mg/L	0.14	< 0.05	0.05	1.1
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	0.001

Client Sample ID			MW44 Water	MW43 Water	MW42 Water	MW41 Water
Sample Matrix			M16-No26820	M16-No26821	M16-No26822	M16-No26823
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.003	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.002	0.004	< 0.001	0.003
Selenium (filtered)	0.001	mg/L	0.002	0.002	< 0.001	0.002
Zinc	0.005	mg/L	0.009	< 0.005	< 0.005	0.013
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Alkali Metals						
Calcium	0.5	mg/L	13	63	1.3	6.6
Magnesium	0.5	mg/L	22	110	4.0	6.2
Potassium	0.5	mg/L	2.1	7.1	0.8	1.2
Sodium	0.5	mg/L	220	620	27	75

Client Sample ID			MW40 Water	SWL17-1 Water	SWL17-2 Water	SWL17-3 Water
Sample Matrix			M16-No26824	M16-No26825	M16-No26826	M16-No26827
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	27	35	36	36
Chloride	1	mg/L	90	74	69	63
Conductivity (at 25°C)	1	uS/cm	290	310	260	290
pH	0.1	pH Units	5.2	3.8	3.9	3.8
Phosphate total (as P)	0.05	mg/L	< 0.05	0.10	0.09	0.16
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.08	0.07	0.07
Sulphate (as S)	5	mg/L	< 5	5.1	< 5	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 300	^{Q19} 290	^{Q19} 270	^{Q19} 260
Turbidity	1	NTU	-	10	11	10
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.28	0.07	0.05	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	1.2	1.0	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.3	1.1	1.2
Total Nitrogen (as N)	0.2	mg/L	1.3	1.3	1.1	1.2

Client Sample ID			MW40 Water	SWL17-1 Water	SWL17-2 Water	SWL17-3 Water
Sample Matrix			M16-No26824	M16-No26825	M16-No26826	M16-No26827
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016	Nov 28, 2016	Nov 28, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.6	0.51	0.52	0.47
Aluminium (filtered)	0.05	mg/L	0.93	0.29	0.28	0.26
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00007	0.00006	0.00007	0.00006
Cadmium (filtered)	0.00005	mg/L	0.00007	0.00006	0.00007	0.00006
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.38	0.30	0.27	0.24
Iron (filtered)	0.05	mg/L	0.16	0.12	0.10	0.10
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.005	0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	2.2	1.7	1.7	1.7
Magnesium	0.5	mg/L	6.7	6.3	5.9	6.1
Potassium	0.5	mg/L	1.6	1.1	1.1	1.2
Sodium	0.5	mg/L	47	36	35	36
Pathogens						
E.coli	1	MPN/100mL	-	<10	<10	10
Thermotolerant Coliforms	1	MPN/100mL	-	<10	<10	<10

Client Sample ID			QC259 Water	QC260 Water
Sample Matrix			M16-No26828	M16-No26829
Eurofins mgt Sample No.			Nov 28, 2016	Nov 28, 2016
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001

Client Sample ID			QC259	QC260
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-No26828	M16-No26829
Date Sampled			Nov 28, 2016	Nov 28, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Nov 30, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Nov 30, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Nov 30, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Nov 30, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Nov 30, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Nov 30, 2016	2 Day
Sulphate (as S) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Nov 30, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Nov 30, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Nov 30, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Nov 30, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Nov 30, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Nov 30, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Nov 30, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Nov 30, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Nov 30, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Nov 30, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 02, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 02, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 02, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Dec 02, 2016	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Nov 30, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Nov 30, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Nov 30, 2016 8:26 AM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 525644	Due: Dec 7, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPER04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X		X	X	X	X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X					X	X		X	
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
External Laboratory																																												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																							
1	MW44	Nov 28, 2016		Water	M16-No26820	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW43	Nov 28, 2016		Water	M16-No26821	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW42	Nov 28, 2016		Water	M16-No26822	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW41	Nov 28, 2016		Water	M16-No26823	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW40	Nov 28, 2016		Water	M16-No26824	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	SWL17-1	Nov 28, 2016		Water	M16-No26825	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	SWL17-2	Nov 28, 2016		Water	M16-No26826	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	SWL17-3	Nov 28, 2016		Water	M16-No26827	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	QC259	Nov 28, 2016		Water	M16-No26828			X		X					X		X		X		X		X		X		X												X					

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Nov 30, 2016 8:26 AM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	525644	Due:	Dec 7, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPE04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as S)	Total Dissolved Solids	Thermotolerant Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X				X		X										X	X	X										X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X						X	X		X	
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
10	QC260	Nov 28, 2016		Water	M16-No26829		X		X		X			X			X			X			X		X		X				X								X				
Test Counts						8	8	10	8	10	8	10	8	8	10	8	8	10	3	8	10	8	10	8	10	8	10	8	10	8	8	8	8	10	8	3	8	3	8	10	8	8	8

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as S)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	100		70-130	Pass	
Chloride	%	123		70-130	Pass	
Phosphate total (as P)	%	102		70-130	Pass	
Phosphorus reactive (as P)	%	117		70-130	Pass	
Sulphate (as S)	%	114		70-130	Pass	
Total Dissolved Solids	%	95		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	102		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	103		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	%	96		70-130	Pass	
Nitrate (as N)	%	96		70-130	Pass	
Nitrite (as N)	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	83		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	101		70-130	Pass	
Aluminium (filtered)	%	106		70-130	Pass	
Arsenic	%	104		70-130	Pass	
Arsenic (filtered)	%	109		70-130	Pass	
Cadmium	%	105		70-130	Pass	
Cadmium (filtered)	%	109		70-130	Pass	
Chromium	%	101		70-130	Pass	
Chromium (filtered)	%	109		70-130	Pass	
Copper	%	100		70-130	Pass	
Copper (filtered)	%	110		70-130	Pass	
Iron	%	100		70-130	Pass	
Iron (filtered)	%	111		70-130	Pass	
Lead	%	104		70-130	Pass	
Lead (filtered)	%	113		70-130	Pass	
Manganese	%	99		70-130	Pass	
Manganese (filtered)	%	104		70-130	Pass	
Mercury	%	111		70-130	Pass	
Mercury (filtered)	%	130		70-130	Pass	
Nickel	%	103		70-130	Pass	
Nickel (filtered)	%	112		70-130	Pass	
Selenium	%	103		70-130	Pass	
Selenium (filtered)	%	94		70-130	Pass	
Zinc	%	101		70-130	Pass	
Zinc (filtered)	%	112		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	93		70-130	Pass	
Magnesium	%	100		70-130	Pass	
Potassium	%	90		70-130	Pass	
Sodium	%	97		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as S)	M16-No25229	NCP	%	129		70-130	Pass	
Spike - % Recovery								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-No25062	NCP	%	125		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-No25062	NCP	%	125		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Ammonia (as N)	M16-No26608	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-No26608	NCP	%	94		70-130	Pass	
Nitrate (as N)	M16-No26608	NCP	%	94		70-130	Pass	
Nitrite (as N)	M16-No26608	NCP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Aluminium	S16-De04293	NCP	%	113		70-130	Pass	
Aluminium (filtered)	S16-De04292	NCP	%	90		70-130	Pass	
Arsenic	S16-De04293	NCP	%	122		70-130	Pass	
Arsenic (filtered)	S16-De04292	NCP	%	103		70-130	Pass	
Cadmium	S16-De04293	NCP	%	117		70-130	Pass	
Cadmium (filtered)	S16-De04292	NCP	%	100		70-130	Pass	
Chromium	S16-De04293	NCP	%	116		70-130	Pass	
Chromium (filtered)	S16-De04292	NCP	%	94		70-130	Pass	
Copper	S16-De04293	NCP	%	111		70-130	Pass	
Copper (filtered)	S16-De04292	NCP	%	82		70-130	Pass	
Iron	S16-De04293	NCP	%	114		70-130	Pass	
Lead	S16-De04293	NCP	%	116		70-130	Pass	
Lead (filtered)	S16-De01140	NCP	%	70		70-130	Pass	
Manganese	S16-De04293	NCP	%	114		70-130	Pass	
Manganese (filtered)	S16-De04292	NCP	%	95		70-130	Pass	
Mercury	S16-De04293	NCP	%	117		70-130	Pass	
Mercury (filtered)	S16-De01140	NCP	%	122		70-130	Pass	
Nickel	S16-De04293	NCP	%	115		70-130	Pass	
Nickel (filtered)	S16-De04292	NCP	%	96		70-130	Pass	
Selenium	S16-De04293	NCP	%	120		70-130	Pass	
Selenium (filtered)	S16-De04292	NCP	%	74		70-130	Pass	
Zinc	S16-De04293	NCP	%	115		70-130	Pass	
Zinc (filtered)	S16-De04292	NCP	%	104		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Magnesium	S16-De00944	NCP	%	100		70-130	Pass	
Potassium	S16-De00944	NCP	%	93		70-130	Pass	
Sodium	M16-No25416	NCP	%	91		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-No26821	CP	%	80		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Total Kjeldahl Nitrogen (as N)	M16-No26821	CP	%	53		70-130	Fail	Q08
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	M16-No26821	CP	%	71		70-130	Pass	
Spike - % Recovery								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	M16-No26822	CP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M16-No26826	CP	%	123			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-No26827	CP	%	112			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	B16-No24915	NCP	mg/L	11	11	1.0	30%	Pass	
Conductivity (at 25°C)	A16-No26087	NCP	uS/cm	5500	5500	<1	30%	Pass	
pH	A16-No26087	NCP	pH Units	7.8	7.7	pass	30%	Pass	
Phosphate total (as P)	M16-No26820	CP	mg/L	0.18	0.17	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	A16-No26087	NCP	mg/L	370	360	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	A16-No26087	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	A16-No26087	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	A16-No26087	NCP	mg/L	370	360	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-No26608	NCP	mg/L	0.30	0.27	11	30%	Pass	
Nitrate & Nitrite (as N)	M16-No26608	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-No26608	NCP	mg/L	0.04	0.04	15	30%	Pass	
Nitrite (as N)	M16-No26608	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-No26820	CP	mg/L	1.3	1.0	2.6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium	M16-No26820	CP	mg/L	1.8	2.1	16	30%	Pass	
Aluminium (filtered)	S16-De04291	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-No26820	CP	mg/L	0.003	0.004	14	30%	Pass	
Arsenic (filtered)	S16-De04291	NCP	mg/L	0.002	0.002	7.0	30%	Pass	
Cadmium (filtered)	S16-De01139	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M16-No26820	CP	mg/L	0.009	0.010	13	30%	Pass	
Chromium (filtered)	S16-De02424	NCP	mg/L	0.002	0.002	1.0	30%	Pass	
Copper	M16-No26820	CP	mg/L	< 0.001	0.001	27	30%	Pass	
Copper (filtered)	S16-De04291	NCP	mg/L	0.001	0.001	6.0	30%	Pass	
Iron	M16-No26820	CP	mg/L	0.85	1.00	16	30%	Pass	
Iron (filtered)	S16-De04291	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	M16-No26820	CP	mg/L	0.003	0.003	17	30%	Pass	
Lead (filtered)	S16-De04291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-No26820	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	S16-De04291	NCP	mg/L	0.035	0.033	4.0	30%	Pass	
Mercury	M16-No26820	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-No26820	CP	mg/L	0.002	0.002	15	30%	Pass	
Nickel (filtered)	S16-De04291	NCP	mg/L	0.009	0.007	18	30%	Pass	
Selenium	M16-No26820	CP	mg/L	0.002	0.002	3.0	30%	Pass	
Zinc	M16-No26820	CP	mg/L	0.009	0.011	12	30%	Pass	
Zinc (filtered)	S16-De01139	NCP	mg/L	0.014	0.012	17	30%	Pass	

Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-No26820	CP	mg/L	13	14	14	30%	Pass	
Magnesium	M16-No26820	CP	mg/L	22	26	16	30%	Pass	
Potassium	M16-No26820	CP	mg/L	2.1	2.5	18	30%	Pass	
Sodium	S16-De00943	NCP	mg/L	17	15	10	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-No26822	CP	mg/L	51	52	2.9	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-No26825	CP	mg/L	74	77	4.4	30%	Pass	
Sulphate (as S)	M16-No26825	CP	mg/L	5.1	< 5	48	30%	Fail	Q15
Total Dissolved Solids	M16-No26825	CP	mg/L	290	290	<1	30%	Pass	
Turbidity	B16-No24915	NCP	NTU	6.3	7.0	10	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-No26826	CP	mg/L	0.07	0.07	1.7	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	No
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Ian Bolch	Senior Analyst-Microbiology (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1611194**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 22-Nov-2016 17:00
Date Analysis Commenced : 22-Nov-2016
Issue Date : 29-Nov-2016 16:15



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG094: It is recognised that total concentration is less than dissolved for Copper on sample EP1611194 #002. However, the difference is within experimental variation of the methods.
- MF = membrane filtration
- CFU = colony forming unit
- MW006: estimate (~) is reported where the growth of presumptive bacteria on the filtered membrane is counted <10 cfu and/or >100 cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC239	QC241	----	----	----
Client sampling date / time				[22-Nov-2016]	[22-Nov-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1611194-001	EP1611194-002	-----	-----	-----	
				Result	Result	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.60	7.46	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	391	428	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	228	244	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	1.1	2.7	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	54	42	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	54	42	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	3	6	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	45	39	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	71	91	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	19	16	----	----	----	
Magnesium	7439-95-4	1	mg/L	9	9	----	----	----	
Sodium	7440-23-5	1	mg/L	44	50	----	----	----	
Potassium	7440-09-7	1	mg/L	4	6	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	159	81	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.2	0.4	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.5	0.4	----	----	----	
Copper	7440-50-8	0.5	µg/L	0.6	1.1	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC239	QC241	----	----	----
Client sampling date / time				[22-Nov-2016]	[22-Nov-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1611194-001	EP1611194-002	-----	-----	-----	
				Result	Result	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	111	99	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.1	0.4	----	----	----	
Manganese	7439-96-5	0.5	µg/L	1.6	7.2	----	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	0.9	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	----	----	----	
Zinc	7440-66-6	1	µg/L	4	9	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	172	103	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.2	0.4	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.7	0.6	----	----	----	
Copper	7440-50-8	0.5	µg/L	1.0	0.9	----	----	----	
Iron	7439-89-6	2	µg/L	132	142	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.2	0.7	----	----	----	
Manganese	7439-96-5	0.5	µg/L	2.5	7.9	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	----	----	----	
Nickel	7440-02-0	0.5	µg/L	0.9	1.2	----	----	----	
Zinc	7440-66-6	1	µg/L	9	9	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.04	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.02	0.19	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.19	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	1.0	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.6	1.2	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.08	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC239	QC241	----	----	----
Client sampling date / time				[22-Nov-2016]	[22-Nov-2016]	----	----	----	
Compound	CAS Number	LOR	Unit	EP1611194-001	EP1611194-002	-----	-----	-----	
				Result	Result	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	4.02	4.22	----	----	----	
Total Cations	----	0.01	meq/L	3.70	3.87	----	----	----	
Ionic Balance	----	0.01	%	4.06	4.34	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	460	1800	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	460	1800	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1611194	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
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Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Nov-2016
Order number	: ----	Date Analysis Commenced	: 22-Nov-2016
C-O-C number	: ----	Issue Date	: 29-Nov-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 666930)									
EP1611187-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.82	7.88	0.764	0% - 20%
EP1611187-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.23	7.25	0.276	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 666931)									
EP1611187-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	530	516	2.72	0% - 20%
EP1611187-012	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	313	313	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 670014)									
EP1611185-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	342	328	4.03	0% - 20%
EP1611185-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	224	228	1.99	0% - 20%
EA045: Turbidity (QC Lot: 665480)									
EP1611148-001	Anonymous	EA045: Turbidity	----	0.1	NTU	8.8	8.8	0.00	0% - 20%
EP1611195-001	Anonymous	EA045: Turbidity	----	0.1	NTU	1.2	1.2	0.00	0% - 50%
ED037P: Alkalinity by PC Titrator (QC Lot: 666929)									
EP1611187-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	130	132	1.24	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	130	132	1.24	0% - 20%
EP1611187-012	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	85	86	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	85	86	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 666932)									
EP1611194-002	QC241	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	42	44	3.24	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 666932) - continued									
EP1611194-002	QC241	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	42	44	3.24	0% - 20%
EP1611209-010	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	209	208	0.533	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	209	208	0.533	0% - 20%
ED038A: Acidity (QC Lot: 666462)									
EP1611059-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	5	5	0.00	No Limit
EP1611156-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	35	36	2.82	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 663825)									
EP1611194-001	QC239	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	45	40	12.6	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 663824)									
EP1611194-001	QC239	ED045G: Chloride	16887-00-6	1	mg/L	71	71	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 664254)									
EP1611194-001	QC239	ED093F: Calcium	7440-70-2	1	mg/L	19	20	7.64	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	9	9	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	44	44	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 668287)									
EP1611059-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1611174-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 666484)									
EP1611059-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1611194-002	QC241	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 667838)									
EP1611194-001	QC239	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.1	0.2	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.5	0.5	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.6	0.6	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1.6	1.6	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	4	4	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	159	156	1.59	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 667839)									
EP1611194-001	QC239	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	111	110	0.902	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 667871)									
EP1611194-001	QC239	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 667871) - continued									
EP1611194-001	QC239	EG094A-T: Lead	7439-92-1	0.1	µg/L	0.2	0.2	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	0.2	0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.7	0.7	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	1.0	0.8	29.4	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	2.5	2.4	0.00	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	0.9	0.9	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	9	4	68.7	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	172	174	0.885	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 667872)									
EP1611194-001	QC239	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	132	131	0.992	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 663834)									
EP1611194-001	QC239	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.06	0.06	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 663826)									
EP1611194-001	QC239	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 663833)									
EP1611195-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.07	<0.01	151	No Limit
EP1611194-001	QC239	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 665332)									
EP1611194-001	QC239	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.6	0.6	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 665333)									
EP1611194-001	QC239	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 663827)									
EP1611194-001	QC239	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 666930)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 666931)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.5	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 670014)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	83	111	
				<10	1000 mg/L	101	70	130	
EA045: Turbidity (QCLot: 665480)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	101	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 666929)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	101	76	126	
				<1	200 mg/L	98.7	90	106	
ED037P: Alkalinity by PC Titrator (QCLot: 666932)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	99.8	76	126	
				<1	200 mg/L	97.4	90	106	
ED038A: Acidity (QCLot: 666462)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	96.0	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 663825)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	89	113	
				<1	100 mg/L	119	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 663824)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	92.6	84	120	
				<1	1000 mg/L	91.8	84	110	
ED093F: Dissolved Major Cations (QCLot: 664254)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	92.6	91	109	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
ED093F: Dissolved Major Cations (QCLot: 664254) - continued									
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	91.6	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	96.9	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	94.6	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 668287)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	94.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 666484)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	97.0	85	105	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 667838)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	99.8	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	95.3	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	94.5	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	95.9	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	91.1	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	97.5	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	95.0	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	89.5	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 667839)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	96.9	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	92.7	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 667871)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	100	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	99.8	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.4	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.7	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.5	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	97.5	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	95.7	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	99.6	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 667872)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	97.8	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	96.4	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 663834)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	103	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 663826)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	86	112	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 663833)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	101	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 665332)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	105	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 665333)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	92.9	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 663827)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	87	115	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 663825)								
EP1611194-002	QC241	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	89.7	70	130	
ED045G: Chloride by Discrete Analyser (QCLot: 663824)								
EP1611194-002	QC241	ED045G: Chloride	16887-00-6	1000 mg/L	92.6	70	130	
EG035F: Dissolved Mercury by FIMS (QCLot: 668287)								
EP1611059-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	87.0	70	130	
EG035T: Total Mercury by FIMS (QCLot: 666484)								
EP1611059-002	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	89.0	70	130	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 667838)								
EP1611194-002	QC241	EG094A-F: Arsenic	7440-38-2	50 µg/L	101	70	130	
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	98.0	70	130	
		EG094A-F: Chromium	7440-47-3	50 µg/L	96.3	70	130	
		EG094A-F: Copper	7440-50-8	50 µg/L	95.4	70	130	
		EG094A-F: Lead	7439-92-1	50 µg/L	97.8	70	130	
		EG094A-F: Manganese	7439-96-5	50 µg/L	96.3	70	130	
		EG094A-F: Nickel	7440-02-0	50 µg/L	93.2	70	130	
		EG094A-F: Zinc	7440-66-6	50 µg/L	106	70	130	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 667871)								
EP1611194-002	QC241	EG094A-T: Arsenic	7440-38-2	50 µg/L	106	70	130	
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	99.2	70	130	
		EG094A-T: Chromium	7440-47-3	50 µg/L	104	70	130	



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 667871) - continued							
EP1611194-002	QC241	EG094A-T: Copper	7440-50-8	50 µg/L	100	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	101	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	98.6	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	99.8	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	92.2	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 663834)							
EP1611194-002	QC241	EK055G: Ammonia as N	7664-41-7	1 mg/L	93.5	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 663826)							
EP1611194-002	QC241	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	108	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 663833)							
EP1611194-002	QC241	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	115	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 665332)							
EP1611195-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	108	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 665333)							
EP1611195-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	100	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 663827)							
EP1611194-002	QC241	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	106	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1611194	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 22-Nov-2016
Site	: ----	Issue Date	: 29-Nov-2016
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved QC239, QC241	----	----	----	24-Nov-2016	23-Nov-2016	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P) QC239, QC241	22-Nov-2016	----	----	----	24-Nov-2016	23-Nov-2016	✖
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P) QC239, QC241	22-Nov-2016	----	----	----	24-Nov-2016	20-Dec-2016	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H) QC239, QC241	22-Nov-2016	----	----	----	28-Nov-2016	29-Nov-2016	✔
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045) QC239, QC241	22-Nov-2016	----	----	----	23-Nov-2016	24-Nov-2016	✔
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P) QC239, QC241	22-Nov-2016	----	----	----	24-Nov-2016	06-Dec-2016	✔
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038) QC239, QC241	22-Nov-2016	----	----	----	24-Nov-2016	06-Dec-2016	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle -unpreserved (ED041G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	20-Dec-2016	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (ED045G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	20-Dec-2016	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle -unpreserved (ED093F) QC239, QC241	22-Nov-2016	----	----	----	24-Nov-2016	29-Nov-2016	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC239, QC241	22-Nov-2016	----	----	----	25-Nov-2016	20-Dec-2016	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC239, QC241	22-Nov-2016	----	----	----	25-Nov-2016	20-Dec-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC239, QC241	22-Nov-2016	----	----	----	25-Nov-2016	21-May-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC239, QC241	22-Nov-2016	25-Nov-2016	21-May-2017	✓	25-Nov-2016	21-May-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	20-Dec-2016	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle -unpreserved (EK057G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	24-Nov-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	20-Dec-2016	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC239, QC241	22-Nov-2016	25-Nov-2016	20-Dec-2016	✓	25-Nov-2016	20-Dec-2016	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC239, QC241	22-Nov-2016	25-Nov-2016	20-Dec-2016	✓	25-Nov-2016	20-Dec-2016	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle -unpreserved (EK071G) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	24-Nov-2016	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC239, QC241	22-Nov-2016	----	----	----	22-Nov-2016	23-Nov-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	2	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1611273**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring
Order number : ----
C-O-C number : Monitoring Event 12
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 23-Nov-2016 16:30
Date Analysis Commenced : 23-Nov-2016
Issue Date : 30-Nov-2016 15:07



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Low Level ORC Total and Dissolved Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC245	QC246	QC247	----	----
Client sampling date / time				[23-Nov-2016]	[23-Nov-2016]	[23-Nov-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1611273-001	EP1611273-002	EP1611273-003	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.45	7.92	7.82	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	3250	2020	1790	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2040	1560	1070	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	238	197	201	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	238	197	201	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	28	9	15	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	55	31	15	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	874	546	466	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	102	52	65	----	----	
Magnesium	7439-95-4	1	mg/L	76	38	39	----	----	
Sodium	7440-23-5	1	mg/L	509	347	260	----	----	
Potassium	7440-09-7	1	mg/L	7	4	6	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	9	13	7	----	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	0.4	<0.2	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Chromium	7440-47-3	0.2	µg/L	0.8	0.2	0.2	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Iron	7439-89-6	2	µg/L	130	55	12	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC245	QC246	QC247	----	----
Client sampling date / time				[23-Nov-2016]	[23-Nov-2016]	[23-Nov-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1611273-001	EP1611273-002	EP1611273-003	-----	-----	
				Result	Result	Result	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Manganese	7439-96-5	0.5	µg/L	9.4	11.6	3.1	----	----	
Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	<0.5	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	<0.2	----	----	
Zinc	7440-66-6	1	µg/L	2	<1	<1	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	1930	4140	1570	----	----	
Arsenic	7440-38-2	0.2	µg/L	1.1	1.5	0.9	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
Chromium	7440-47-3	0.2	µg/L	5.4	7.7	2.0	----	----	
Copper	7440-50-8	0.5	µg/L	2.3	0.8	<0.5	----	----	
Iron	7439-89-6	2	µg/L	2880	1760	911	----	----	
Lead	7439-92-1	0.1	µg/L	1.9	2.5	0.7	----	----	
Manganese	7439-96-5	0.5	µg/L	13.0	14.4	3.7	----	----	
Selenium	7782-49-2	0.2	µg/L	1.3	0.6	0.2	----	----	
Nickel	7440-02-0	0.5	µg/L	2.1	1.9	0.7	----	----	
Zinc	7440-66-6	1	µg/L	73	5	2	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.44	0.13	0.26	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	0.5	0.6	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	0.5	0.6	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.09	0.19	0.08	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.10	0.08	----	----	
EN055: Ionic Balance									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC245	QC246	QC247	----	----
Client sampling date / time				[23-Nov-2016]	[23-Nov-2016]	[23-Nov-2016]	----	----	
Compound	CAS Number	LOR	Unit	EP1611273-001	EP1611273-002	EP1611273-003	-----	-----	
				Result	Result	Result	----	----	
EN055: Ionic Balance - Continued									
Total Anions	----	0.01	meq/L	30.6	20.0	17.5	----	----	
Total Cations	----	0.01	meq/L	33.7	20.9	17.9	----	----	
Ionic Balance	----	0.01	%	4.84	2.28	1.25	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1611273	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 23-Nov-2016
Order number	: ----	Date Analysis Commenced	: 23-Nov-2016
C-O-C number	: Monitoring Event 12	Issue Date	: 30-Nov-2016
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 668822)									
EP1611273-001	QC245	EA005-P: pH Value	----	0.01	pH Unit	7.45	7.44	0.134	0% - 20%
EP1611263-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.52	7.53	0.133	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 668823)									
EP1611273-001	QC245	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3250	3260	0.303	0% - 20%
EP1611263-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	37300	37000	0.756	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 671644)									
EP1611237-031	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	140000	138000	1.44	0% - 20%
EP1611272-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1330	1290	3.47	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 668824)									
EP1611273-001	QC245	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	238	237	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	238	237	0.00	0% - 20%
EP1611263-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	229	239	4.10	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	229	239	4.10	0% - 20%
ED038A: Acidity (QC Lot: 670115)									
EP1611200-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	6	6	0.00	No Limit
EP1611272-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	68	70	2.90	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 665582)									
EP1611266-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	206	209	1.62	0% - 20%
EP1611273-001	QC245	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	55	56	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 665585)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED045G: Chloride by Discrete Analyser (QC Lot: 665585) - continued									
EP1611273-001	QC245	ED045G: Chloride	16887-00-6	1	mg/L	874	885	1.25	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 668071)									
EP1611217-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	310	304	1.72	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	856	848	0.892	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	7580	7480	1.37	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	282	271	4.05	0% - 20%
EP1611221-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 670170)									
EP1611200-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1611263-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 670167)									
EP1611200-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1611273-002	QC246	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 669691)									
EP1611263-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<2.0	<2.0	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	4480	4580	2.15	0% - 20%
EP1611280-002	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	1.2	1.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	171	168	1.70	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 669692)									
EP1611263-001	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.20	<0.05	120	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.2	<0.1	66.7	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	7.1	7.4	4.87	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.5	0.5	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<1.0	<0.5	66.7	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1650	1670	1.43	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	5.0	5.1	0.00	0% - 50%
		EG094A-F: Zinc	7440-66-6	1	µg/L	6	6	0.00	No Limit
EP1611280-002	Anonymous	EG094A-F: Aluminium	7429-90-5	5	µg/L	9	9	0.00	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.1	1.0	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.4	0.3	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	3.8	3.9	2.92	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	20.5	20.3	1.13	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.8	0.8	0.00	No Limit
EG094A-F: Zinc	7440-66-6	1	µg/L	25	25	0.00	0% - 20%		

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 Work Order : EP1611273
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA_NL_Baseline GW_ SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 669692) - continued									
EP1611280-002	Anonymous	EG094A-F: Aluminium	7429-90-5	5	µg/L	15	15	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 669698)									
EP1611273-001	QC245	EG094B-T: Selenium	7782-49-2	0.2	µg/L	1.3	0.8	42.5	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	2880	2640	8.67	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 669699)									
EP1611273-001	QC245	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	1.9	1.9	0.00	0% - 50%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	1.1	1.0	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	5.4	4.8	12.0	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	2.3	2.2	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	13.0	12.9	1.29	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	2.1	2.0	5.09	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	73	72	0.00	0% - 20%
		EG094A-T: Aluminium	7429-90-5	5	µg/L	1930	1880	2.60	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 665601)									
EP1611273-001	QC245	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.44	0.41	7.76	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 665584)									
EP1611266-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.14	0.14	0.00	0% - 50%
EP1611273-001	QC245	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 665600)									
EP1611266-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	2.72	2.86	4.77	0% - 20%
EP1611273-001	QC245	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 668970)									
EP1611273-001	QC245	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	1.1	0.00	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 668969)									
EP1611273-001	QC245	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.09	0.15	46.7	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 665583)									
EP1611273-001	QC245	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.06	0.07	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 668822)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 668823)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.2	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 671644)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	106	83	111	
				<10	1000 mg/L	111	70	130	
ED037P: Alkalinity by PC Titrator (QCLot: 668824)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	111	76	126	
				<1	200 mg/L	99.8	90	106	
ED038A: Acidity (QCLot: 670115)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	100	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 665582)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	108	89	113	
				<1	100 mg/L	91.2	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 665585)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.0	84	120	
				<1	1000 mg/L	92.4	84	110	
ED093F: Dissolved Major Cations (QCLot: 668071)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	101	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	97.2	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	98.4	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 670170)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	95.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 670167)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	97.0	85	105	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 669691)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	103	79	115	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 669691) - continued								
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	97.8	70	122
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 669692)								
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	101	89	117
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	98.7	79	121
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.4	87	111
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	101	80	122
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	92.6	83	117
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	100	74	118
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	96.9	83	123
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	94.0	86	118
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	105	83	121
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 669698)								
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	99.4	82	124
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	102	77	121
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 669699)								
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	101	85	129
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	106	89	121
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	95.4	85	113
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.9	87	127
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	99.5	90	122
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	105	79	125
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	93.4	88	120
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	99.4	90	122
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	107	81	129
EK055G: Ammonia as N by Discrete Analyser (QCLot: 665601)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	96.4	87	115
EK057G: Nitrite as N by Discrete Analyser (QCLot: 665584)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	108	86	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 665600)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	108	92	112
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 668970)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.6	82	110
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 668969)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	87.1	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 665583)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	87	115



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 665582)							
EP1611266-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	106	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 665585)							
EP1611273-002	QC246	ED045G: Chloride	16887-00-6	1000 mg/L	75.0	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 670170)							
EP1611200-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	84.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 670167)							
EP1611200-002	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	83.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 669692)							
EP1611273-001	QC245	EG094A-F: Arsenic	7440-38-2	50 µg/L	118	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	97.9	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.5	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	100	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	102	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	89.3	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	102	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	111	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 669699)							
EP1611273-002	QC246	EG094A-T: Arsenic	7440-38-2	50 µg/L	111	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	101	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	105	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	101	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	104	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	97.0	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	103	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	107	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 665601)							
EP1611273-002	QC246	EK055G: Ammonia as N	7664-41-7	1 mg/L	78.9	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 665584)							
EP1611266-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	104	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 665600)							
EP1611266-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130

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 Work Order : EP1611273
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 668970)							
EP1611273-003	QC247	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	88.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 668969)							
EP1611273-003	QC247	EK067G: Total Phosphorus as P	----	1 mg/L	88.9	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 665583)							
EP1611273-002	QC246	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	109	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1611273	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 23-Nov-2016
Site	: ----	Issue Date	: 30-Nov-2016
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1611266--002	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
QC245, QC247	QC246,	----	----	----	25-Nov-2016	23-Nov-2016	2

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
QC245, QC247	23-Nov-2016	QC246,	----	----	25-Nov-2016	23-Nov-2016	*
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
QC245, QC247	23-Nov-2016	QC246,	----	----	25-Nov-2016	21-Dec-2016	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
QC245, QC247	23-Nov-2016	QC246,	----	----	29-Nov-2016	30-Nov-2016	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) QC245, QC247	QC246,	23-Nov-2016	----	----	----	25-Nov-2016	07-Dec-2016	✓
ED038A: Acidity								
Clear Plastic Bottle - Natural (ED038) QC245, QC247	QC246,	23-Nov-2016	----	----	----	28-Nov-2016	07-Dec-2016	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) QC245, QC247	QC246,	23-Nov-2016	----	----	----	23-Nov-2016	21-Dec-2016	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) QC245, QC247	QC246,	23-Nov-2016	----	----	----	23-Nov-2016	21-Dec-2016	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) QC245, QC247	QC246,	23-Nov-2016	----	----	----	29-Nov-2016	30-Nov-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC245, QC247	QC246,	23-Nov-2016	----	----	----	28-Nov-2016	21-Dec-2016	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC245, QC247	QC246,	23-Nov-2016	----	----	----	28-Nov-2016	21-Dec-2016	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC245, QC247	QC246,	23-Nov-2016	----	----	----	28-Nov-2016	22-May-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC245, QC247	QC246,	23-Nov-2016	28-Nov-2016	22-May-2017	✓	28-Nov-2016	22-May-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC245, QC247	QC246,	23-Nov-2016	----	----	----	23-Nov-2016	21-Dec-2016	✓



Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC245, QC247	QC246, 23-Nov-2016	----	----	----	23-Nov-2016	25-Nov-2016	✓	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC245, QC247	QC246, 23-Nov-2016	----	----	----	23-Nov-2016	21-Dec-2016	✓	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC245, QC247	QC246, 23-Nov-2016	29-Nov-2016	21-Dec-2016	✓	29-Nov-2016	21-Dec-2016	✓	
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC245, QC247	QC246, 23-Nov-2016	29-Nov-2016	21-Dec-2016	✓	29-Nov-2016	21-Dec-2016	✓	
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC245, QC247	QC246, 23-Nov-2016	----	----	----	23-Nov-2016	25-Nov-2016	✓	



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1612105**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : EN/007/14
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 14-Dec-2016 17:40
Date Analysis Commenced : 14-Dec-2016
Issue Date : 21-Dec-2016 14:16



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC METALS (f&t) conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006:estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC262	QC263	QC264	QC265	----
Client sampling date / time		14-Dec-2016 00:00		14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.51	7.60	8.01	7.85	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	4440	2550	2250	1740	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2490	1570	1870	1110	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	3.7	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	9	228	206	212	----
Total Alkalinity as CaCO3	----	1	mg/L	9	228	206	212	----
ED038A: Acidity								
Acidity as CaCO3	----	1	mg/L	8	22	9	13	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	21	41	16	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	1280	721	637	484	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	14	88	61	65	----
Magnesium	7439-95-4	1	mg/L	99	58	45	40	----
Sodium	7440-23-5	1	mg/L	778	359	339	243	----
Potassium	7440-09-7	1	mg/L	15	7	5	6	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00006	<0.00004	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Aluminium	7429-90-5	5	µg/L	38	13	22	18	----
Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.5	0.3	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
Chromium	7440-47-3	0.2	µg/L	<0.2	0.8	0.3	<0.2	----
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC262	QC263	QC264	QC265	----
Client sampling date / time				14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----	
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----	
				Result	Result	Result	Result	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	50	109	141	14	----	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Manganese	7439-96-5	0.5	µg/L	13.9	6.4	17.3	3.3	----	
Nickel	7440-02-0	0.5	µg/L	1.5	<0.5	<0.5	<0.5	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	----	
Zinc	7440-66-6	1	µg/L	<1	1	<1	2	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	148	2470	28400	6720	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	1.2	16.1	21.0	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.12	<0.05	----	
Chromium	7440-47-3	0.2	µg/L	0.3	5.0	54.1	11.0	----	
Copper	7440-50-8	0.5	µg/L	<0.5	2.7	7.8	3.0	----	
Iron	7439-89-6	2	µg/L	868	2930	10800	38500	----	
Lead	7439-92-1	0.1	µg/L	<0.1	2.8	30.7	12.9	----	
Manganese	7439-96-5	0.5	µg/L	16.6	9.4	31.1	6.6	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	1.0	5.8	2.9	----	
Nickel	7440-02-0	0.5	µg/L	1.7	2.8	27.4	17.6	----	
Zinc	7440-66-6	1	µg/L	1	54	42	11	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.47	0.17	0.26	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.0	0.3	0.4	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.0	0.3	0.4	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.09	0.11	0.10	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.06	0.10	0.08	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC262	QC263	QC264	QC265	----
Client sampling date / time				14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----	
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----	
				Result	Result	Result	Result	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	39.4	25.3	22.9	18.2	----	
Total Cations	----	0.01	meq/L	43.1	25.0	21.6	17.2	----	
Ionic Balance	----	0.01	%	4.46	0.74	2.96	2.71	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	~33	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	~33	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1612105	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Dec-2016
Order number	: ----	Date Analysis Commenced	: 14-Dec-2016
C-O-C number	: ----	Issue Date	: 21-Dec-2016
Sampler	: ----		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 4		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 693877)									
EP1612105-002	QC263	EA005-P: pH Value	----	0.01	pH Unit	7.60	7.67	0.917	0% - 20%
EP1612049-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.16	7.18	0.279	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 693879)									
EP1612108-018	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1280	1290	1.17	0% - 20%
EP1612105-002	QC263	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2550	2570	0.762	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 698339)									
EP1612066-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	92000	96700	5.00	0% - 20%
EP1612105-003	QC264	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1870	2000	6.87	0% - 20%
EA045: Turbidity (QC Lot: 694279)									
EP1612105-001	QC262	EA045: Turbidity	----	0.1	NTU	3.7	3.6	0.00	0% - 20%
EP1612167-002	Anonymous	EA045: Turbidity	----	0.1	NTU	83.0	83.2	0.240	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 693878)									
EP1612063-022	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EP1612105-002	QC263	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	228	226	0.889	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	228	226	0.889	0% - 20%
ED038A: Acidity (QC Lot: 695516)									
EP1612093-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	10	10	0.00	0% - 50%
EP1612105-002	QC263	ED038: Acidity as CaCO3	----	1	mg/L	22	23	4.44	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 692273)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 692273) - continued									
EP1612105-001	QC262	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	132	11.9	0% - 20%
EP1612105-003	QC264	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	41	41	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 692276)									
EP1612105-001	QC262	ED045G: Chloride	16887-00-6	1	mg/L	1280	1330	3.94	0% - 20%
EP1612105-003	QC264	ED045G: Chloride	16887-00-6	1	mg/L	637	636	0.203	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 694041)									
EP1612022-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	58	57	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	50	50	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	79	79	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	11	11	0.00	0% - 50%
EP1612074-005	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	116	115	0.950	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	12	12	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	69	68	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 698961)									
EP1611848-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 695826)									
EP1612105-002	QC263	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1629000-007	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	0.00010	0.00012	17.8	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 697069)									
EP1612105-001	QC262	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	13.9	14.0	0.00	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	1.5	1.6	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	1	0.00	No Limit
EG094A-F: Aluminium	7429-90-5	5	µg/L	38	39	3.21	No Limit		
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 697070)									
EP1612105-001	QC262	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	50	50	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697071)									
EP1612105-001	QC262	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.3	0.4	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	16.6	16.7	0.737	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697071) - continued									
EP1612105-001	QC262	EG094A-T: Nickel	7440-02-0	0.5	µg/L	1.7	1.8	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	1	1	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	148	152	2.94	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697072)									
EP1612105-001	QC262	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	868	894	3.00	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 692287)									
EP1612105-001	QC262	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 692274)									
EP1612105-001	QC262	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-003	QC264	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 692286)									
EP1612107-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-001	QC262	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 693776)									
EP1612105-001	QC262	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 693777)									
EP1612105-001	QC262	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 692275)									
EP1612105-001	QC262	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-003	QC264	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.10	0.10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 693877)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 693879)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 698339)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	83	111	
				<10	1000 mg/L	101	70	130	
EA045: Turbidity (QCLot: 694279)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.4	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 693878)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	105	90	106	
ED038A: Acidity (QCLot: 695516)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	105	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 692273)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	89	113	
				<1	100 mg/L	96.3	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 692276)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.4	84	120	
				<1	1000 mg/L	102	84	110	
ED093F: Dissolved Major Cations (QCLot: 694041)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.4	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	102	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	94.3	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	94.0	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 698961)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	95.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 695826)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	102	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697069)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	104	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.4	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	104	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.1	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	102	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	112	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	90.2	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	111	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697070)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	112	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	106	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697071)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	109	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	106	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	92.8	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.8	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	107	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.8	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	86.7	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697072)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	107	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	79.5	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 692287)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 692274)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 692286)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	108	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 693776)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.2	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 693777)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	79.0	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 692275)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 692273)							
EP1612105-002	QC263	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	104	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 692276)							
EP1612105-002	QC263	ED045G: Chloride	16887-00-6	1000 mg/L	91.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 698961)							
EP1611848-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	85.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 695826)							
EP1612105-001	QC262	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	83.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697069)							
EP1612105-002	QC263	EG094A-F: Arsenic	7440-38-2	50 µg/L	129	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	121	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	119	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	121	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	91.4	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	112	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	119	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697071)							
EP1612105-002	QC263	EG094A-T: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	124	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	127	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	121	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	115	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	114	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 692287)							
EP1612105-002	QC263	EK055G: Ammonia as N	7664-41-7	1 mg/L	92.7	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 692274)							
EP1612105-002	QC263	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	112	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 692286)							
EP1612105-002	QC263	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	120	70	130

Page : 8 of 8
 Work Order : EP1612105
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 693776)							
EP1612105-002	QC263	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 693777)							
EP1612105-002	QC263	EK067G: Total Phosphorus as P	----	1 mg/L	90.6	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 692275)							
EP1612105-002	QC263	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	106	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1612105	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Dec-2016
Site	: ----	Issue Date	: 21-Dec-2016
Sampler	: ----	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved						
QC262,	QC263,	----	----	----	15-Dec-2016	14-Dec-2016
QC264,	QC265					1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	14-Dec-2016
QC264,	QC265						*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	11-Jan-2017
QC264,	QC265						✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H)							
QC262,	QC263,	14-Dec-2016	----	----	----	19-Dec-2016	21-Dec-2016
QC264,	QC265						✓
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045)							
QC262		14-Dec-2016	----	----	----	15-Dec-2016	16-Dec-2016
							✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	28-Dec-2016
QC264,	QC265						✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038)							
QC262,	QC263,	14-Dec-2016	----	----	----	16-Dec-2016	28-Dec-2016
QC264,	QC265						✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	16-Dec-2016	21-Dec-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	20-Dec-2016	11-Jan-2017	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	20-Dec-2016	11-Jan-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	19-Dec-2016	12-Jun-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	12-Jun-2017	✓	19-Dec-2016	12-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	16-Dec-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	11-Jan-2017	✓	19-Dec-2016	11-Jan-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	11-Jan-2017	✓	19-Dec-2016	11-Jan-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	16-Dec-2016	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC262		14-Dec-2016	----	----	----	14-Dec-2016	15-Dec-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 13, 2016 4:34 PM**
Eurofins | mgt reference: **527744**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **527744-W-V2**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Dec 13, 2016**

Client Sample ID			MW1	MW2	MW3	MW4
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14899	M16-De14900	M16-De14901	M16-De14902
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	19	23	53	24
Chloride	1	mg/L	39	110	22	29
Conductivity (at 25°C)	1	uS/cm	600	700	340	200
pH	0.1	pH Units	7.1	7.0	6.7	6.5
Phosphate total (as P)	0.05	mg/L	0.34	0.25	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	43	71	22	5.2
Total Dissolved Solids	10	mg/L	410	470	230	Q19210
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	140	120	120	53
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	140	120	120	53
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	< 0.01	0.08	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	23	0.46	0.39	0.90
Nitrate (as N)	0.02	mg/L	23	0.46	0.37	0.86
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.04
Organic Nitrogen (as N)	0.2	mg/L	2.7	1.4	0.6	1.1
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.7	1.4	0.7	1.1
Total Nitrogen (as N)	0.2	mg/L	26	1.9	1.1	2.0
Heavy Metals						
Aluminium	0.05	mg/L	0.42	2.0	0.21	0.17
Aluminium (filtered)	0.05	mg/L	< 0.05	0.10	0.08	0.08
Arsenic	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.003	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.34	< 0.05	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M16-De14899	M16-De14900	M16-De14901	M16-De14902
Eurofins mgt Sample No.			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.004	0.002	0.003	0.002
Selenium (filtered)	0.001	mg/L	0.004	0.002	0.003	0.002
Zinc	0.005	mg/L	0.015	0.008	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	74	77	50	31
Magnesium	0.5	mg/L	7.2	7.1	5.9	2.1
Potassium	0.5	mg/L	27	0.5	2.1	< 0.5
Sodium	0.5	mg/L	21	66	10.0	13

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M16-De14903	M16-De14904	M16-De14905	M16-De14906
Eurofins mgt Sample No.			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	40	67	34	11
Chloride	1	mg/L	94	110	17	22
Conductivity (at 25°C)	1	uS/cm	330	470	180	92
pH	0.1	pH Units	4.7	5.3	4.7	5.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.06
Sulphate (as SO ₄)	5	mg/L	< 5	48	28	7.6
Total Dissolved Solids	10	mg/L	^{Q19} 350	^{Q19} 330	120	^{Q19} 91
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.83	0.02	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	5.8	4.0
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	5.8	4.0
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.5	0.3	1.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	1.1	1.4	0.4
Total Nitrogen (as N)	0.2	mg/L	1.5	1.1	7.2	4.4

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M16-De14903	M16-De14904	M16-De14905	M16-De14906
Eurofins mgt Sample No.			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.74	0.78	1.5	1.2
Aluminium (filtered)	0.05	mg/L	0.48	0.39	0.45	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.63	0.72	5.2	0.13
Iron (filtered)	0.05	mg/L	0.26	0.22	0.09	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	< 0.005	< 0.005	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	15	7.0	14	11
Magnesium	0.5	mg/L	12	18	3.8	0.9
Potassium	0.5	mg/L	1.3	6.3	2.5	< 0.5
Sodium	0.5	mg/L	30	40	9.9	5.9

Client Sample ID			MW10 Water	QC260a Water	QC259a Water	QC258 Water
Sample Matrix			M16-De14907	M16-De14908	M16-De14909	M16-De14910
Eurofins mgt Sample No.			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	20	15	-	-
Chloride	1	mg/L	20	37	-	-
Conductivity (at 25°C)	1	uS/cm	300	600	-	-
pH	0.1	pH Units	6.9	7.1	-	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as SO4)	5	mg/L	19	26	-	-
Total Dissolved Solids	10	mg/L	200	420	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	88	130	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	88	130	-	-

Client Sample ID			MW10	QC260a	QC259a	QC258
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14907	M16-De14908	M16-De14909	M16-De14910
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	3.0	22	-	-
Nitrate (as N)	0.02	mg/L	2.9	22	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.8	2.0	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	2.0	-	-
Total Nitrogen (as N)	0.2	mg/L	3.8	24	-	-
Heavy Metals						
Aluminium	0.05	mg/L	1.4	0.18	-	-
Aluminium (filtered)	0.05	mg/L	0.09	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	< 0.05	-	-
Iron (filtered)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.015	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	51	73	-	-
Magnesium	0.5	mg/L	4.1	7.2	-	-
Potassium	0.5	mg/L	0.9	27	-	-
Sodium	0.5	mg/L	7.3	20	-	-

Client Sample ID			SWL1-1	SWL1-2	SWL1-3	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14911	M16-De14912	M16-De14913	M16-De14914
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	-	< 0.02
TRH C10-C14	0.05	mg/L	-	-	-	< 0.05
TRH C15-C28	0.1	mg/L	-	-	-	< 0.1
TRH C29-C36	0.1	mg/L	-	-	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	-	-	< 0.1
BTEX						
Benzene	0.001	mg/L	-	-	-	< 0.001
Toluene	0.001	mg/L	-	-	-	< 0.001
Ethylbenzene	0.001	mg/L	-	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	-	-	< 0.002
o-Xylene	0.001	mg/L	-	-	-	< 0.001
Xylenes - Total	0.003	mg/L	-	-	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	-	-	99
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	-	< 0.01
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	-	< 0.05
TRH C6-C10	0.02	mg/L	-	-	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	-	< 0.02
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	-	< 0.05
TRH >C16-C34	0.1	mg/L	-	-	-	< 0.1
TRH >C34-C40	0.1	mg/L	-	-	-	< 0.1
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	42
Chloride	1	mg/L	79	92	83	100
Conductivity (at 25°C)	1	uS/cm	380	470	360	860
pH	0.1	pH Units	7.5	6.9	7.0	6.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	35	42	18	200
Total Dissolved Solids	10	mg/L	220	280	220	540
Turbidity	1	NTU	8.5	1.9	1.2	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	69	61	55	110
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	69	61	55	110
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.02	< 0.01	0.13
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	3.8
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	3.7
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.07
Organic Nitrogen (as N)	0.2	mg/L	1.0	0.5	0.3	0.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	0.5	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	1.0	0.5	0.3	4.2

Client Sample ID			SWL1-1	SWL1-2	SWL1-3	MW55
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14911	M16-De14912	M16-De14913	M16-De14914
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.08	< 0.05	< 0.05	1.1
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.11
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.19	0.43	0.13	0.51
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	0.096	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.025	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Zinc	0.005	mg/L	0.017	0.009	0.006	0.005
Zinc (filtered)	0.005	mg/L	0.009	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	20	22	19	85
Magnesium	0.5	mg/L	10	11	6.7	14
Potassium	0.5	mg/L	5.2	5.6	2.7	19
Sodium	0.5	mg/L	49	54	45	79
Pathogens						
E.coli	1	MPN/100mL	52	62	30	-
Thermotolerant Coliforms	1	MPN/100mL	52	230	73	-

Client Sample ID			SWL2-1	SWL2-2	SWL2-3	SWL3-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14915	M16-De14916	M16-De14917	M16-De14918
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	72	71	71	69
Conductivity (at 25°C)	1	uS/cm	390	390	400	380
pH	0.1	pH Units	7.6	7.4	7.6	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	36	35	35	24
Total Dissolved Solids	10	mg/L	240	220	250	240
Turbidity	1	NTU	1.0	< 1	< 1	1.3

Client Sample ID			SWL2-1	SWL2-2	SWL2-3	SWL3-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14915	M16-De14916	M16-De14917	M16-De14918
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	69	62	62	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	69	62	62	72
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.03	0.03	0.03	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.06
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.3	0.4	0.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.3	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	0.4	0.3	0.4	0.5
Heavy Metals						
Aluminium	0.05	mg/L	0.19	0.17	0.18	0.31
Aluminium (filtered)	0.05	mg/L	0.09	0.09	0.07	0.16
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.17	0.13	0.13	0.14
Iron (filtered)	0.05	mg/L	0.08	0.07	0.07	0.08
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	< 0.005	0.011	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	21	21	21	23
Magnesium	0.5	mg/L	11	11	11	9.0
Potassium	0.5	mg/L	3.7	3.8	3.6	2.1
Sodium	0.5	mg/L	43	43	43	44
Pathogens						
E.coli	1	MPN/100mL	240	M ¹⁵ <10	M ¹⁵ <10	20
Thermotolerant Coliforms	1	MPN/100mL	240	M ¹⁵ <10	20	20

Client Sample ID			SWL3-2	SWL3-3	SWL4-1	SWL4-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14919	M16-De14920	M16-De14921	M16-De14922
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	68	67	140	140
Conductivity (at 25°C)	1	uS/cm	380	380	510	570
pH	0.1	pH Units	8.1	7.5	6.5	6.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	24	24	69	63
Total Dissolved Solids	10	mg/L	240	240	350	340
Turbidity	1	NTU	1.4	1.3	22	2.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	77	77	20	24
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	77	77	20	24
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.01	0.15	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.06	0.12	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	0.05	0.12	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.2	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.4	0.2
Total Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.5	0.2
Heavy Metals						
Aluminium	0.05	mg/L	0.32	0.30	0.37	0.11
Aluminium (filtered)	0.05	mg/L	0.17	0.18	0.06	0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.003	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.16	0.15	1.7	0.21
Iron (filtered)	0.05	mg/L	0.07	0.08	0.06	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.020	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.015	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.004	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	< 0.005	0.035	0.037
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.014	0.034

Client Sample ID			SWL3-2	SWL3-3	SWL4-1	SWL4-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De14919	M16-De14920	M16-De14921	M16-De14922
Date Sampled			Dec 13, 2016	Dec 13, 2016	Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	22	22	20	20
Magnesium	0.5	mg/L	8.9	9.0	14	13
Potassium	0.5	mg/L	2.1	2.1	5.5	5.1
Sodium	0.5	mg/L	45	44	74	72
Pathogens						
E.coli	1	MPN/100mL	10	^{M15} <10	10	^{M15} <10
Thermotolerant Coliforms	1	MPN/100mL	20	41	20000	630

Client Sample ID			SWL4-3	SWL5-1
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-De14923	M16-De14924
Date Sampled			Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10
Chloride	1	mg/L	110	44
Conductivity (at 25°C)	1	uS/cm	500	190
pH	0.1	pH Units	6.6	5.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	51	15
Total Dissolved Solids	10	mg/L	310	^{Q19} 170
Turbidity	1	NTU	1.6	8.4
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	22	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	22	< 20
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	< 0.01	0.02
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.7
Total Nitrogen (as N)	0.2	mg/L	0.2	0.7
Heavy Metals				
Aluminium	0.05	mg/L	0.12	0.73
Aluminium (filtered)	0.05	mg/L	0.05	0.38
Arsenic	0.001	mg/L	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001
Copper	0.001	mg/L	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	0.38	0.42

Client Sample ID			SWL4-3	SWL5-1
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-De14923	M16-De14924
Date Sampled			Dec 13, 2016	Dec 13, 2016
Test/Reference	LOR	Unit		
Heavy Metals				
Iron (filtered)	0.05	mg/L	0.06	0.14
Lead	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	0.011
Manganese (filtered)	0.005	mg/L	0.014	0.011
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	0.030	< 0.005
Zinc (filtered)	0.005	mg/L	0.016	< 0.005
Alkali Metals				
Calcium	0.5	mg/L	18	8.5
Magnesium	0.5	mg/L	11	3.7
Potassium	0.5	mg/L	4.8	0.7
Sodium	0.5	mg/L	62	21
Pathogens				
E.coli	1	MPN/100mL	20	20
Thermotolerant Coliforms	1	MPN/100mL	1600	240

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Dec 16, 2016	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 14, 2016	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 14, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Dec 16, 2016	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 14, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Dec 14, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 14, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 14, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 14, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Dec 14, 2016	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Dec 14, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Dec 14, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Dec 14, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 14, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 14, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 14, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 14, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 14, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 14, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 14, 2016	7 Day
Heavy Metals			
- Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 15, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 15, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 15, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Dec 14, 2016	180 Day

Description

E.coli

- Method: LTM-MIC-6621

Thermotolerant Coliforms

- Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN

Testing Site

Melbourne

Melbourne

Extracted

Dec 14, 2016

Dec 14, 2016

Holding Time

24 Hour

24 Hour

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 13, 2016 4:34 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	527744	Due:	Dec 20, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Ion	Ion (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	Eurofins mgt Suite B1			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X									X	X	X					X	X	X	X			X	X	X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										X	X							
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
10	QC260a	Dec 13, 2016		Water	M16-De14908	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	QC259a	Dec 13, 2016		Water	M16-De14909			X	X	X					X		X			X	X	X	X	X	X	X	X	X											X								
12	QC258	Dec 13, 2016		Water	M16-De14910			X	X	X					X		X			X	X	X	X	X	X	X	X	X											X								
13	SWL1-1	Dec 13, 2016		Water	M16-De14911	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL1-2	Dec 13, 2016		Water	M16-De14912	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL1-3	Dec 13, 2016		Water	M16-De14913	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	MW55	Dec 13, 2016		Water	M16-De14914	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL2-1	Dec 13, 2016		Water	M16-De14915	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL2-2	Dec 13, 2016		Water	M16-De14916	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL2-3	Dec 13, 2016		Water	M16-De14917	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	SWL3-1	Dec 13, 2016		Water	M16-De14918	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
21	SWL3-2	Dec 13, 2016		Water	M16-De14919	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 13, 2016 4:34 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	527744	Due:	Dec 20, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Ion	Ion (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Suphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	Eurofins mgt Suite B1			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X			X											X	X	X			X	X	X	X	X	X	X	X	X	X	X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X										X	X		X					
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
22	SWL3-3	Dec 13, 2016		Water	M16-De14920	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
23	SWL4-1	Dec 13, 2016		Water	M16-De14921	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24	SWL4-2	Dec 13, 2016		Water	M16-De14922	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25	SWL4-3	Dec 13, 2016		Water	M16-De14923	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
26	SWL5-1	Dec 13, 2016		Water	M16-De14924	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						24	24	26	24	26	24	26	24	24	26	24	24	26	13	24	26	24	26	24	26	24	26	24	26	24	24	24	24	24	26	24	13	24	13	24	26	24	24	24	24	1	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	123			70-130	Pass	
TRH C10-C14	%	76			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	108			70-130	Pass	
Toluene	%	96			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	96			70-130	Pass	
Xylenes - Total	%	97			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	100			70-130	Pass	
TRH C6-C10	%	125			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	74			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	103			70-130	Pass	
Chloride	%	124			70-130	Pass	
Phosphate total (as P)	%	91			70-130	Pass	
Phosphorus reactive (as P)	%	119			70-130	Pass	
Sulphate (as SO4)	%	122			70-130	Pass	
Total Dissolved Solids	%	109			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	100			70-130	Pass	
Total Alkalinity (as CaCO3)	%	108			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Nitrogens (speciated)								
Ammonia (as N)	%	92			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	92			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	96			70-130	Pass		
Aluminium (filtered)	%	105			70-130	Pass		
Arsenic	%	100			70-130	Pass		
Arsenic (filtered)	%	109			70-130	Pass		
Cadmium	%	111			70-130	Pass		
Cadmium (filtered)	%	126			70-130	Pass		
Chromium	%	101			70-130	Pass		
Chromium (filtered)	%	113			70-130	Pass		
Copper	%	99			70-130	Pass		
Copper (filtered)	%	83			70-130	Pass		
Iron	%	97			70-130	Pass		
Iron (filtered)	%	119			70-130	Pass		
Lead	%	101			70-130	Pass		
Lead (filtered)	%	106			70-130	Pass		
Manganese	%	100			70-130	Pass		
Manganese (filtered)	%	113			70-130	Pass		
Mercury	%	112			70-130	Pass		
Mercury (filtered)	%	113			70-130	Pass		
Nickel	%	98			70-130	Pass		
Nickel (filtered)	%	112			70-130	Pass		
Selenium	%	115			70-130	Pass		
Selenium (filtered)	%	72			70-130	Pass		
Zinc	%	94			70-130	Pass		
Zinc (filtered)	%	123			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	118			70-130	Pass		
Magnesium	%	116			70-130	Pass		
Potassium	%	106			70-130	Pass		
Sodium	%	103			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14899	CP	%	93		70-130	Pass	
Nitrite (as N)	M16-De14899	CP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Mercury (filtered)	S16-De16901	NCP	%	110		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-De14900	CP	%	71		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14900	CP	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De14900	CP	%	89		70-130	Pass	
Nitrate (as N)	M16-De14900	CP	%	88		70-130	Pass	
Nitrite (as N)	M16-De14900	CP	%	100		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-De14900	CP	%	112		70-130	Pass	
Arsenic	M16-De14900	CP	%	111		70-130	Pass	
Arsenic (filtered)	M16-De14900	CP	%	116		70-130	Pass	
Cadmium	M16-De14900	CP	%	116		70-130	Pass	
Cadmium (filtered)	M16-De14900	CP	%	120		70-130	Pass	
Chromium	M16-De14900	CP	%	113		70-130	Pass	
Chromium (filtered)	M16-De14900	CP	%	110		70-130	Pass	
Copper	M16-De14900	CP	%	104		70-130	Pass	
Copper (filtered)	M16-De14900	CP	%	77		70-130	Pass	
Iron	M16-De14900	CP	%	107		70-130	Pass	
Lead	M16-De14900	CP	%	104		70-130	Pass	
Manganese	M16-De14900	CP	%	109		70-130	Pass	
Manganese (filtered)	M16-De14900	CP	%	110		70-130	Pass	
Mercury	M16-De14900	CP	%	115		70-130	Pass	
Nickel	M16-De14900	CP	%	105		70-130	Pass	
Nickel (filtered)	M16-De14900	CP	%	105		70-130	Pass	
Selenium (filtered)	M16-De14900	CP	%	84		70-130	Pass	
Zinc	M16-De14900	CP	%	100		70-130	Pass	
Zinc (filtered)	M16-De14900	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-De14900	CP	%	91		70-130	Pass	
Magnesium	M16-De14900	CP	%	108		70-130	Pass	
Sodium	M16-De14900	CP	%	75		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as SO4)	M16-De14903	CP	%	118		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Lead (filtered)	S16-De14029	NCP	%	86		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14911	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De14911	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-De14911	CP	%	92		70-130	Pass	
Nitrite (as N)	M16-De14911	CP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-De14912	CP	%	85		70-130	Pass	
Phosphorus reactive (as P)	M16-De14912	CP	%	97		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO3)	M16-De14912	CP	%	89		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14912	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De14912	CP	%	91		70-130	Pass	
Nitrate (as N)	M16-De14912	CP	%	91		70-130	Pass	
Nitrite (as N)	M16-De14912	CP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De14912	CP	%	70		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C9	S16-No25862	NCP	%	74		70-130	Pass	
TRH C10-C14	M16-De15109	NCP	%	119		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	S16-No25862	NCP	%	112		70-130	Pass	
Toluene	S16-No25862	NCP	%	102		70-130	Pass	
Ethylbenzene	S16-No25862	NCP	%	106		70-130	Pass	
m&p-Xylenes	S16-No25862	NCP	%	105		70-130	Pass	
o-Xylene	S16-No25862	NCP	%	105		70-130	Pass	
Xylenes - Total	S16-No25862	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	S16-No25862	NCP	%	101		70-130	Pass	
TRH C6-C10	S16-No25862	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M16-De15109	NCP	%	119		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M16-De14917	CP	%	114		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M16-De14920	CP	%	100		70-130	Pass	
Arsenic	M16-De14920	CP	%	106		70-130	Pass	
Cadmium	M16-De14920	CP	%	109		70-130	Pass	
Chromium	M16-De14920	CP	%	106		70-130	Pass	
Copper	M16-De14920	CP	%	102		70-130	Pass	
Iron	M16-De14920	CP	%	102		70-130	Pass	
Lead	M16-De14920	CP	%	103		70-130	Pass	
Manganese	M16-De14920	CP	%	104		70-130	Pass	
Mercury	M16-De14920	CP	%	113		70-130	Pass	
Nickel	M16-De14920	CP	%	103		70-130	Pass	
Selenium	M16-De14920	CP	%	117		70-130	Pass	
Zinc	M16-De14920	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-De14920	CP	%	92		70-130	Pass	
Magnesium	M16-De14920	CP	%	100		70-130	Pass	
Potassium	M16-De14920	CP	%	100		70-130	Pass	
Sodium	M16-De14920	CP	%	95		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14921	CP	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De14921	CP	%	89		70-130	Pass	
Nitrate (as N)	M16-De14921	CP	%	89		70-130	Pass	
Nitrite (as N)	M16-De14921	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-De14922	CP	%	89		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De14922	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De14922	CP	%	92		70-130	Pass	
Nitrate (as N)	M16-De14922	CP	%	92		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrite (as N)	M16-De14922	CP	%	100			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De14922	CP	%	70			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-De14924	CP	%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De14899	CP	mg/L	19	17	7.0	30%	Pass	
Conductivity (at 25°C)	M16-De14899	CP	uS/cm	600	560	2.0	30%	Pass	
pH	M16-De14899	CP	pH Units	7.1	7.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-De14899	CP	mg/L	140	140	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De14899	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De14899	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De14899	CP	mg/L	140	140	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-De14899	CP	mg/L	0.02	0.02	11	30%	Pass	
Nitrite (as N)	M16-De14899	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Iron (filtered)	M16-De14899	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Mercury	S16-De18485	NCP	mg/L	0.0001	0.0001	17	30%	Pass	
Zinc (filtered)	M16-De16144	NCP	mg/L	0.009	0.007	20	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	M16-De14899	CP	mg/L	74	70	6.0	30%	Pass	
Magnesium	M16-De14899	CP	mg/L	7.2	6.9	3.0	30%	Pass	
Potassium	M16-De14899	CP	mg/L	27	25	5.0	30%	Pass	
Sodium	M16-De14899	CP	mg/L	21	19	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De14900	CP	mg/L	23	14	46	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Nitrogens (speciated)									
Ammonia (as N)	M16-De14900	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-De14900	CP	mg/L	0.46	0.46	2.0	30%	Pass	
Nitrate (as N)	M16-De14900	CP	mg/L	0.46	0.46	2.0	30%	Pass	
Nitrite (as N)	M16-De14900	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M16-De14902	CP	mg/L	29	29	1.1	30%	Pass	
Sulphate (as SO ₄)	M16-De14902	CP	mg/L	5.2	< 5	5.3	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-De14904	CP	mg/L	330	320	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De14907	CP	uS/cm	300	260	2.0	30%	Pass	
pH	M16-De14907	CP	pH Units	6.9	6.9	pass	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De14907	CP	mg/L	88	88	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De14907	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De14907	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De14907	CP	mg/L	88	88	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De14911	CP	uS/cm	380	380	1.0	30%	Pass	
pH	M16-De14911	CP	pH Units	7.5	7.6	pass	30%	Pass	
Phosphate total (as P)	M16-De14911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M16-De14911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De14911	CP	mg/L	69	56	21	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De14911	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De14911	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De14911	CP	mg/L	69	56	21	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-De14911	CP	mg/L	0.02	0.02	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-De14911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-De14911	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-De14911	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De14911	CP	mg/L	1.0	0.7	36	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron (filtered)	M16-De14911	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De14912	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-De14912	CP	mg/L	0.02	0.02	3.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-De14912	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-De14912	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-De14912	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-No25860	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M16-De15108	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-De15108	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-De15108	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-No25860	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S16-No25860	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S16-No25860	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-No25860	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-No25860	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-No25860	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-No25860	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S16-No25860	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M16-De15108	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M16-De15108	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M16-De15108	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-De14916	CP	mg/L	71	72	1.5	30%	Pass
Sulphate (as SO4)	M16-De14916	CP	mg/L	35	35	1.6	30%	Pass
Total Dissolved Solids	M16-De14916	CP	mg/L	220	230	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-De14919	CP	uS/cm	380	370	1.0	30%	Pass
pH	M16-De14919	CP	pH Units	8.1	8.1	pass	30%	Pass
Turbidity	M16-De14919	CP	NTU	1.4	1.5	7.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-De14919	CP	mg/L	77	70	10	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-De14919	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-De14919	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-De14919	CP	mg/L	77	70	10	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-De14919	CP	mg/L	22	22	1.0	30%	Pass
Magnesium	M16-De14919	CP	mg/L	8.9	8.8	1.0	30%	Pass
Potassium	M16-De14919	CP	mg/L	2.1	2.2	1.0	30%	Pass
Sodium	M16-De14919	CP	mg/L	45	43	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-De14921	CP	mg/L	< 10	< 10	<1	30%	Pass
pH	M16-De14921	CP	pH Units	6.5	6.6	pass	30%	Pass
Phosphate total (as P)	M16-De14921	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-De14921	CP	mg/L	0.15	0.14	7.0	30%	Pass
Nitrate & Nitrite (as N)	M16-De14921	CP	mg/L	0.12	0.11	8.0	30%	Pass
Nitrate (as N)	M16-De14921	CP	mg/L	0.12	0.11	8.0	30%	Pass
Nitrite (as N)	M16-De14921	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M16-De14921	CP	mg/L	0.4	0.4	3.4	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-De14922	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-De14922	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate & Nitrite (as N)	M16-De14922	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-De14922	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-De14922	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-De14923	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments

V2 - report updated to amend sample IDs

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 14, 2016 4:15 PM**
Eurofins | mgt reference: **527923**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **527923-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Dec 14, 2016

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-De16124	M16-De16133	M16-De16134	M16-De16135
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	18	20	27
Chloride	1	mg/L	390	2200	9900	1500
Conductivity (at 25°C)	1	uS/cm	1400	6500	29000	4700
pH	0.1	pH Units	7.5	5.8	6.7	5.6
Phosphate total (as P)	0.05	mg/L	0.07	0.06	1.1	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.31	< 0.05
Sulphate (as SO ₄)	5	mg/L	44	220	1100	160
Total Dissolved Solids	10	mg/L	870	3500	18000	2700
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	130	< 20	160	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	130	< 20	160	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.04	0.11	0.07	0.11
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	29	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	29	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.04	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.8	1.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.9	1.8
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	31	1.8
Heavy Metals						
Aluminium	0.05	mg/L	0.09	0.27	0.27	0.18
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.18	< 0.05
Arsenic	0.001	mg/L	0.001	0.003	0.006	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.003	0.006	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.0012	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00090	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.027	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.023	< 0.001
Iron	0.05	mg/L	0.80	4.6	0.92	6.7
Iron (filtered)	0.05	mg/L	< 0.05	3.6	0.52	3.4
Lead	0.001	mg/L	0.001	0.008	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M16-De16124	M16-De16133	M16-De16134	M16-De16135
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.043	0.050	0.17	0.007
Manganese (filtered)	0.005	mg/L	0.039	0.050	0.16	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.027	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	0.028	< 0.001
Selenium	0.001	mg/L	0.004	0.0013	0.017	0.002
Selenium (filtered)	0.001	mg/L	0.004	0.001	0.012	0.001
Zinc	0.005	mg/L	< 0.005	0.022	0.55	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	0.022	0.39	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	68	43	130	23
Magnesium	0.5	mg/L	27	200	630	110
Potassium	0.5	mg/L	7.8	19	110	20
Sodium	0.5	mg/L	170	1100	5500	770

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			M16-De16136	M16-De16137	M16-De16138	M16-De16139
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	21	17	38	< 10
Chloride	1	mg/L	2700	1400	760	540
Conductivity (at 25°C)	1	uS/cm	8300	4500	2600	2100
pH	0.1	pH Units	5.9	5.1	4.8	7.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Sulphate (as SO ₄)	5	mg/L	180	250	130	37
Total Dissolved Solids	10	mg/L	4600	2600	1600	1200
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	27	< 20	< 20	220
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	27	< 20	< 20	220
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.16	0.02	0.04	0.12
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	< 0.2

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			M16-De16136	M16-De16137	M16-De16138	M16-De16139
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.85	0.37	0.71	0.54
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.09	< 0.05
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00009	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00008	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.007	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.68	0.50	1.3	0.18
Iron (filtered)	0.05	mg/L	< 0.05	0.22	0.93	< 0.05
Lead	0.001	mg/L	0.001	0.21	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.015	< 0.001	< 0.001
Manganese	0.005	mg/L	0.018	0.013	0.030	0.019
Manganese (filtered)	0.005	mg/L	0.017	0.014	0.033	0.009
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.005	0.006	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.004	0.004	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	0.033	0.011	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.026	0.006	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	28	25	12	58
Magnesium	0.5	mg/L	180	140	60	40
Potassium	0.5	mg/L	38	13	10	3.6
Sodium	0.5	mg/L	1400	770	450	320

Client Sample ID			MW46 Water	MW45 Water	QC266 Water	QC267 Water
Sample Matrix			M16-De16140	M16-De16141	M16-De16142	M16-De16143
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	13	< 10	-	-
Chloride	1	mg/L	630	460	-	-
Conductivity (at 25°C)	1	uS/cm	2300	1700	-	-
pH	0.1	pH Units	7.8	7.9	-	-
Phosphate total (as P)	0.05	mg/L	0.05	0.07	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.05	0.07	-	-
Sulphate (as SO4)	5	mg/L	17	21	-	-
Total Dissolved Solids	10	mg/L	1600	Q19 1900	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	230	240	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)	20	mg/L	230	240	-	-

Client Sample ID			MW46	MW45	QC266	QC267
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De16140	M16-De16141	M16-De16142	M16-De16143
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.39	0.23	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.4	< 0.2	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.3	-	-
Total Nitrogen (as N)	0.2	mg/L	0.8	0.3	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.45	0.68	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.50	0.37	-	-
Iron (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.014	0.006	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	86	60	-	-
Magnesium	0.5	mg/L	55	37	-	-
Potassium	0.5	mg/L	5.7	4.5	-	-
Sodium	0.5	mg/L	330	220	-	-

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL19-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De16144	M16-De16145	M16-De16146	M16-De16147
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	1400	1500	1400	1300
Conductivity (at 25°C)	1	uS/cm	4500	4200	4100	4400
pH	0.1	pH Units	7.0	6.6	6.8	6.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	100	100	100	150
Total Dissolved Solids	10	mg/L	2700	2700	2700	2400
Turbidity	1	NTU	11	8.9	10	11
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	35	33	34	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	35	33	34	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.23	0.23	< 0.01
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.04	0.04	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.3	1.6	0.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	1.5	1.8	0.5
Total Nitrogen (as N)	0.2	mg/L	1.6	1.5	1.8	0.5
Heavy Metals						
Aluminium	0.05	mg/L	0.09	0.09	0.07	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.9	3.0	2.9	0.07
Iron (filtered)	0.05	mg/L	0.89	0.83	0.86	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.019	0.020	0.018	0.016
Manganese (filtered)	0.005	mg/L	0.019	0.018	0.018	0.016
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.003	0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	0.006	0.007	< 0.005
Zinc (filtered)	0.005	mg/L	0.009	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	SWL19-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De16144	M16-De16145	M16-De16146	M16-De16147
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	14	14	14	14
Magnesium	0.5	mg/L	83	84	83	88
Potassium	0.5	mg/L	14	14	14	12
Sodium	0.5	mg/L	790	790	770	710
Pathogens						
E.coli	1	MPN/100mL	2600	2700	2900	M15 <10
Thermotolerant Coliforms	1	MPN/100mL	16000	7700	8700	85

Client Sample ID			SWL19-2	SWL19-3	SWL18-1	SWL18-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De16148	M16-De16149	M16-De16150	M16-De16151
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Chloride	1	mg/L	1300	1400	1300	1200
Conductivity (at 25°C)	1	uS/cm	4200	4300	3600	4200
pH	0.1	pH Units	6.2	6.2	7.5	7.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.71	0.70
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.68	0.69
Sulphate (as SO ₄)	5	mg/L	150	150	52	50
Total Dissolved Solids	10	mg/L	2400	2400	2400	2300
Turbidity	1	NTU	15	R14 < 1	9.5	8.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	120	120
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	120	120
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.01	< 0.01	0.04	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.8	1.4
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.8	1.4
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.8	1.4
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.22	< 0.05	1.5	1.6

Client Sample ID			SWL19-2	SWL19-3	SWL18-1	SWL18-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De16148	M16-De16149	M16-De16150	M16-De16151
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.64	0.63
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.019	0.018	0.17	0.18
Manganese (filtered)	0.005	mg/L	0.017	0.017	0.12	0.15
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.002	0.001	0.001
Nickel (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	14	13	37	36
Magnesium	0.5	mg/L	89	84	89	90
Potassium	0.5	mg/L	12	12	15	14
Sodium	0.5	mg/L	710	700	600	620
Pathogens						
E.coli	1	MPN/100mL	10	10	73	52
Thermotolerant Coliforms	1	MPN/100mL	52	41	610	440

Client Sample ID			SWL18-3	QC261	QC268
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-De16152	M16-De16153	M16-De16154
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	< 10	< 10	20
Chloride	1	mg/L	1200	1300	2800
Conductivity (at 25°C)	1	uS/cm	3800	4400	7300
pH	0.1	pH Units	7.4	6.2	6.4
Phosphate total (as P)	0.05	mg/L	0.69	< 0.05	0.10
Phosphorus reactive (as P)	0.05	mg/L	0.68	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	51	150	180
Total Dissolved Solids	10	mg/L	2400	2400	4600
Turbidity	1	NTU	8.8	3.1	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	110	< 20	27
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	110	< 20	27
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.04	< 0.01	0.18
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.3	0.2	< 0.2

Client Sample ID			SWL18-3	QC261	QC268
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-De16152	M16-De16153	M16-De16154
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Test/Reference	LOR	Unit			
Nitrogens (speciated)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.2	0.3
Total Nitrogen (as N)	0.2	mg/L	1.3	0.2	0.3
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	< 0.05	0.96
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.004	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	0.06	0.84
Iron (filtered)	0.05	mg/L	0.63	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.003
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.17	0.016	0.018
Manganese (filtered)	0.005	mg/L	0.15	0.017	0.017
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	36	14	28
Magnesium	0.5	mg/L	89	95	180
Potassium	0.5	mg/L	14	13	41
Sodium	0.5	mg/L	610	740	1500
Pathogens					
E.coli	1	MPN/100mL	63	M15<10	-
Thermotolerant Coliforms	1	MPN/100mL	440	10	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 15, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Dec 15, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 15, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 15, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 15, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Dec 15, 2016	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Dec 15, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Dec 15, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Dec 15, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 15, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 15, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 15, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 15, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 15, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 15, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 15, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 03, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 03, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 16, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 03, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Dec 15, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Dec 15, 2016	24 Hour

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Dec 14, 2016 4:15 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 527923	Due: Dec 21, 2016
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X					X	X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X			X	
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
External Laboratory																																													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																								
1	MW54	Dec 14, 2016		Water	M16-De16124	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW53	Dec 14, 2016		Water	M16-De16133	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW52	Dec 14, 2016		Water	M16-De16134	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW51	Dec 14, 2016		Water	M16-De16135	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW50	Dec 14, 2016		Water	M16-De16136	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW49	Dec 14, 2016		Water	M16-De16137	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW48	Dec 14, 2016		Water	M16-De16138	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8	MW47	Dec 14, 2016		Water	M16-De16139	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW46	Dec 14, 2016		Water	M16-De16140	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 14, 2016 4:15 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	527923	Due:	Dec 21, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X		X											X	X	X					X	X	X			X		X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X			X		
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	MW45	Dec 14, 2016		Water	M16-De16141	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	QC266	Dec 14, 2016		Water	M16-De16142			X	X	X				X		X			X	X	X	X	X	X	X	X	X				X								X					
12	QC267	Dec 14, 2016		Water	M16-De16143			X	X	X				X		X			X	X	X	X	X	X	X	X	X				X								X					
13	SWL20-1	Dec 14, 2016		Water	M16-De16144	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL20-2	Dec 14, 2016		Water	M16-De16145	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL20-3	Dec 14, 2016		Water	M16-De16146	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	SWL19-1	Dec 14, 2016		Water	M16-De16147	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL19-2	Dec 14, 2016		Water	M16-De16148	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL19-3	Dec 14, 2016		Water	M16-De16149	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL18-1	Dec 14, 2016		Water	M16-De16150	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	SWL18-2	Dec 14, 2016		Water	M16-De16151	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
21	SWL18-3	Dec 14, 2016		Water	M16-De16152	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	101			70-130	Pass	
Chloride	%	111			70-130	Pass	
Phosphate total (as P)	%	92			70-130	Pass	
Phosphorus reactive (as P)	%	121			70-130	Pass	
Sulphate (as SO ₄)	%	108			70-130	Pass	
Total Dissolved Solids	%	86			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	111			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	111			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	90			70-130	Pass	
Nitrate & Nitrite (as N)	%	96			70-130	Pass	
Nitrate (as N)	%	96			70-130	Pass	
Nitrite (as N)	%	105			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	88			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	98			70-130	Pass	
Aluminium (filtered)	%	110			70-130	Pass	
Arsenic	%	109			70-130	Pass	
Arsenic (filtered)	%	108			70-130	Pass	
Cadmium	%	115			70-130	Pass	
Cadmium (filtered)	%	125			70-130	Pass	
Chromium	%	105			70-130	Pass	
Chromium (filtered)	%	113			70-130	Pass	
Copper	%	105			70-130	Pass	
Copper (filtered)	%	83			70-130	Pass	
Iron	%	102			70-130	Pass	
Iron (filtered)	%	119			70-130	Pass	
Lead	%	107			70-130	Pass	
Lead (filtered)	%	94			70-130	Pass	
Manganese	%	105			70-130	Pass	
Manganese (filtered)	%	114			70-130	Pass	
Mercury	%	116			70-130	Pass	
Mercury (filtered)	%	91			70-130	Pass	
Nickel	%	104			70-130	Pass	
Nickel (filtered)	%	114			70-130	Pass	
Selenium	%	125			70-130	Pass	
Selenium (filtered)	%	76			70-130	Pass	
Zinc	%	103			70-130	Pass	
Zinc (filtered)	%	126			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	104			70-130	Pass	
Magnesium	%	107			70-130	Pass	
Potassium	%	103			70-130	Pass	
Sodium	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-De16124	CP	%	99		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M16-De15009	NCP	%	74		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-De15009	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De15009	NCP	%	84		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De15009	NCP	%	89		70-130	Pass	
Nitrate (as N)	M16-De15009	NCP	%	89		70-130	Pass	
Nitrite (as N)	M16-De15009	NCP	%	99		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De16124	CP	%	89		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	S16-De18122	NCP	%	89		70-130	Pass	
Selenium	M16-De14920	NCP	%	117		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Magnesium	S16-De19247	NCP	%	108		70-130	Pass	
Potassium	S16-De19247	NCP	%	118		70-130	Pass	
Sodium	S16-De19247	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Total Kjeldahl Nitrogen (as N)	M16-De16133	CP	%	85		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-De16133	CP	%	121		70-130	Pass	
Arsenic	M16-De16133	CP	%	102		70-130	Pass	
Arsenic (filtered)	M16-De16133	CP	%	118		70-130	Pass	
Cadmium	M16-De16133	CP	%	104		70-130	Pass	
Cadmium (filtered)	M16-De16133	CP	%	115		70-130	Pass	
Chromium	M16-De16133	CP	%	104		70-130	Pass	
Chromium (filtered)	M16-De16133	CP	%	120		70-130	Pass	
Copper	M16-De16133	CP	%	93		70-130	Pass	
Copper (filtered)	M16-De16133	CP	%	82		70-130	Pass	
Iron	M16-De16133	CP	%	96		70-130	Pass	
Lead	M16-De16133	CP	%	91		70-130	Pass	
Manganese	M16-De16133	CP	%	96		70-130	Pass	
Manganese (filtered)	M16-De16133	CP	%	119		70-130	Pass	
Mercury	M16-De16133	CP	%	104		70-130	Pass	
Nickel	M16-De16133	CP	%	91		70-130	Pass	
Nickel (filtered)	M16-De16133	CP	%	107		70-130	Pass	
Selenium (filtered)	M16-De16133	CP	%	93		70-130	Pass	
Zinc	M16-De16133	CP	%	89		70-130	Pass	
Zinc (filtered)	M16-De16133	CP	%	107		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-De16133	CP	%	108		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-De16145	CP	%	95		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M16-De16145	CP	%	118			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO ₄)	M16-De16154	CP	%	94			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De16124	CP	mg/L	< 10	< 10	<1	30%	Pass	
Conductivity (at 25°C)	M16-De16124	CP	uS/cm	1400	1400	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16124	CP	mg/L	130	110	13	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De16124	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De16124	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De16124	CP	mg/L	130	110	13	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium (filtered)	M16-De16124	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M16-De16124	CP	mg/L	0.001	0.001	2.0	30%	Pass	
Cadmium	M16-De16124	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	M16-De16124	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-De16124	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M16-De16124	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-De16124	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	M16-De16124	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead (filtered)	M16-De16124	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-De16124	CP	mg/L	0.043	0.039	8.0	30%	Pass	
Manganese (filtered)	M16-De16124	CP	mg/L	0.039	0.037	6.0	30%	Pass	
Nickel	M16-De16124	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	M16-De16124	CP	mg/L	68	65	4.0	30%	Pass	
Magnesium	M16-De16124	CP	mg/L	27	24	9.0	30%	Pass	
Potassium	M16-De16124	CP	mg/L	7.8	7.1	10	30%	Pass	
Sodium	M16-De16124	CP	mg/L	170	150	9.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De16133	CP	mg/L	18	19	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De16135	CP	uS/cm	4700	4400	6.0	30%	Pass	
pH	M16-De16135	CP	pH Units	5.6	5.7	pass	30%	Pass	
Total Dissolved Solids	M16-De16135	CP	mg/L	2700	2700	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16135	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De16135	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De16135	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De16135	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De16138	CP	uS/cm	2600	2600	<1	30%	Pass	
pH	M16-De16138	CP	pH Units	4.8	4.7	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16138	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De16138	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De16138	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De16138	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-De16141	CP	mg/L	460	460	1.2	30%	Pass
Sulphate (as SO ₄)	M16-De16141	CP	mg/L	21	22	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De16144	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M16-De16144	CP	uS/cm	4500	4200	7.0	30%	Pass
pH	M16-De16144	CP	pH Units	7.0	7.0	pass	30%	Pass
Phosphate total (as P)	M16-De16144	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphorus reactive (as P)	M16-De16144	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16144	CP	mg/L	35	35	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De16144	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De16144	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De16144	CP	mg/L	35	35	2.0	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-De16144	CP	mg/L	1.6	1.7	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-De16144	CP	mg/L	0.09	0.10	18	30%	Pass
Aluminium (filtered)	M16-De16144	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M16-De16144	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M16-De16144	CP	mg/L	2.9	2.9	<1	30%	Pass
Iron (filtered)	M16-De16144	CP	mg/L	0.89	0.81	10	30%	Pass
Lead	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-De16144	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-De16144	CP	mg/L	0.019	0.019	2.0	30%	Pass
Manganese (filtered)	M16-De16144	CP	mg/L	0.019	0.017	8.0	30%	Pass
Mercury	M16-De16144	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	M16-De16144	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M16-De16144	CP	mg/L	0.003	0.003	1.0	30%	Pass
Nickel (filtered)	M16-De16144	CP	mg/L	0.002	0.002	18	30%	Pass
Zinc	M16-De16144	CP	mg/L	0.010	0.009	17	30%	Pass
Zinc (filtered)	M16-De16144	CP	mg/L	0.009	0.007	20	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-De16144	CP	mg/L	14	15	1.0	30%	Pass
Magnesium	M16-De16144	CP	mg/L	83	84	2.0	30%	Pass
Potassium	M16-De16144	CP	mg/L	14	14	2.0	30%	Pass
Sodium	M16-De16144	CP	mg/L	790	800	2.0	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De16145	CP	mg/L	< 10	< 10	<1	30%	Pass
Phosphate total (as P)	M16-De16145	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Total Kjeldahl Nitrogen (as N)	M16-De16145	CP	mg/L	1.5	1.7	8.4	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-De16147	CP	uS/cm	4400	3800	15	30%	Pass
Total Dissolved Solids	M16-De16147	CP	mg/L	2400	2700	10	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16147	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De16147	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De16147	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De16147	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	M16-De16149	CP	NTU	< 1	< 1	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M16-De16153	CP	mg/L	1300	1300	<1	30%	Pass
Sulphate (as SO ₄)	M16-De16153	CP	mg/L	150	150	1.1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De16154	CP	mg/L	20	18	12	30%	Pass
Conductivity (at 25°C)	M16-De16154	CP	uS/cm	7300	8300	14	30%	Pass
pH	M16-De16154	CP	pH Units	6.4	6.3	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De16154	CP	mg/L	27	22	22	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De16154	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De16154	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De16154	CP	mg/L	27	22	22	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-De16154	CP	mg/L	0.18	0.17	3.0	30%	Pass
Nitrate & Nitrite (as N)	M16-De16154	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-De16154	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-De16154	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R14	These results have been confirmed by repeat analysis

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 16, 2016 8:52 AM**
Eurofins | mgt reference: **528455**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

micro samples SWL15-2 and SWL16-3 to be performed in Melbourne, all others to be tested in Eurofins Perth

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **528455-W**
 Project name **NL_BASELINE GW_SW MONITORING LABORATORY**
 Project ID **ENAUPERT04483AA**
 Received Date **Dec 16, 2016**

Client Sample ID			MW35 Water	MW36 Water	MW38 Water	MW39 Water
Sample Matrix			M16-De18189	M16-De18226	M16-De18227	M16-De18228
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	68	< 10	28	15
Chloride	1	mg/L	35	10	130	80
Conductivity (at 25°C)	1	uS/cm	150	92	540	370
pH	0.1	pH Units	4.2	6.9	7.2	7.1
Phosphate total (as P)	0.05	mg/L	1.5	0.21	1.3	1.7
Phosphorus reactive (as P)	0.05	mg/L	0.73	0.10	0.78	1.1
Sulphate (as SO4)	5	mg/L	24	32	28	< 5
Total Dissolved Solids	10	mg/L	480	110	400	270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	22	70	57
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	22	70	57
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.21	0.02	0.58	1.2
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.9	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	1.9	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	4.1	1.3	1.6	2.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.3	1.3	2.2	3.9
Total Nitrogen (as N)	0.2	mg/L	4.3	3.2	2.2	3.9
Heavy Metals						
Aluminium	0.05	mg/L	0.55	0.07	0.44	0.12
Aluminium (filtered)	0.05	mg/L	0.25	< 0.05	0.19	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.27	< 0.05	0.32	0.51
Iron (filtered)	0.05	mg/L	0.10	< 0.05	0.08	0.11
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW35 Water	MW36 Water	MW38 Water	MW39 Water
Sample Matrix			M16-De18189	M16-De18226	M16-De18227	M16-De18228
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 14, 2016	Dec 14, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.014	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.010	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	5.9	14	20	15
Magnesium	0.5	mg/L	2.2	1.5	11	6.3
Potassium	0.5	mg/L	11	< 0.5	16	14
Sodium	0.5	mg/L	14	8.4	61	42

Client Sample ID			SWL15-2 Water	SWL16-3 Water	MW33 Water	MW34 Water
Sample Matrix			M16-De18229	M16-De18230	M16-De19761	M16-De19762
Eurofins mgt Sample No.			Dec 14, 2016	Dec 14, 2016	Dec 15, 2016	Dec 15, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	24	< 10	20	69
Chloride	1	mg/L	88	74	62	62
Conductivity (at 25°C)	1	uS/cm	350	340	350	290
pH	0.1	pH Units	4.9	7.4	6.6	5.4
Phosphate total (as P)	0.05	mg/L	0.63	1.3	0.20	1.2
Phosphorus reactive (as P)	0.05	mg/L	0.34	0.79	0.05	0.63
Sulphate (as SO ₄)	5	mg/L	10	19	< 5	< 5
Total Dissolved Solids	10	mg/L	320	300	210	350
Turbidity	1	NTU	1.4	4.2	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	42	82	35
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	42	82	35
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	< 0.01	0.03	0.25	0.24
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.5	1.7	0.8	4.9
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	1.7	1.0	5.1
Total Nitrogen (as N)	0.2	mg/L	1.5	1.7	1.0	5.1

Client Sample ID			SWL15-2	SWL16-3	MW33	MW34
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De18229	M16-De18230	M16-De19761	M16-De19762
Date Sampled			Dec 14, 2016	Dec 14, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.68	0.23	0.41	1.1
Aluminium (filtered)	0.05	mg/L	0.39	0.10	0.08	0.37
Arsenic	0.001	mg/L	< 0.001	0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.28	0.95	0.33	1.8
Iron (filtered)	0.05	mg/L	0.20	0.29	< 0.05	0.59
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.016	0.008	< 0.005
Manganese (filtered)	0.005	mg/L	0.006	0.005	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.012	0.007	< 0.005
Zinc (filtered)	0.005	mg/L	0.006	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	5.0	19	28	14
Magnesium	0.5	mg/L	7.2	7.8	5.5	6.9
Potassium	0.5	mg/L	6.9	14	3.0	16
Sodium	0.5	mg/L	50	43	35	36
Pathogens						
E.coli	1	MPN/100mL	M15 <10	86	-	-
Thermotolerant Coliforms	1	MPN/100mL	2600	1500	-	-

Client Sample ID			MW37	MW40	MW41	QC269
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De19765	M16-De19768	M16-De19769	M16-De19770
Date Sampled			Dec 15, 2016	Dec 15, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	19	40	120	-
Chloride	1	mg/L	18	85	150	-
Conductivity (at 25°C)	1	uS/cm	80	320	550	-
pH	0.1	pH Units	4.6	4.6	3.6	-
Phosphate total (as P)	0.05	mg/L	0.34	0.07	0.97	-
Phosphorus reactive (as P)	0.05	mg/L	0.18	< 0.05	0.78	-
Sulphate (as SO4)	5	mg/L	5.4	6.5	29	-
Total Dissolved Solids	10	mg/L	32	240	620	-

Client Sample ID			MW37 Water M16-De19765 Dec 15, 2016	MW40 Water M16-De19768 Dec 15, 2016	MW41 Water M16-De19769 Dec 15, 2016	QC269 Water M16-De19770 Dec 15, 2016
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.19	0.29	0.79	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.04	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.1	1.0	2.8	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.3	3.6	-
Total Nitrogen (as N)	0.2	mg/L	1.3	1.3	3.6	-
Heavy Metals						
Aluminium	0.05	mg/L	0.19	1.4	2.1	-
Aluminium (filtered)	0.05	mg/L	< 0.05	0.56	0.96	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00012	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00012	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.010	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Iron	0.05	mg/L	0.06	0.31	1.2	-
Iron (filtered)	0.05	mg/L	< 0.05	0.11	0.46	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.003	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.013	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.6	2.5	7.4	-
Magnesium	0.5	mg/L	1.4	6.9	7.4	-
Potassium	0.5	mg/L	1.3	1.7	1.5	-
Sodium	0.5	mg/L	11	44	78	-

Client Sample ID			QC270	SWL15-1	SWL16-1	SWL16-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De19771	M16-De19772	M16-De19774	M16-De19775
Date Sampled			Dec 15, 2016	Dec 15, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	-	31	19	< 10
Chloride	1	mg/L	-	91	150	77
Conductivity (at 25°C)	1	uS/cm	-	330	640	370
pH	0.1	pH Units	-	4.8	6.6	6.8
Phosphate total (as P)	0.05	mg/L	-	0.52	1.6	1.4
Phosphorus reactive (as P)	0.05	mg/L	-	0.47	1.4	0.96
Sulphate (as SO ₄)	5	mg/L	-	7.5	35	15
Total Dissolved Solids	10	mg/L	-	260	470	230
Turbidity	1	NTU	-	44	1.8	4.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	< 20	56	50
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	< 20	56	50
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	-	0.14	0.05	0.03
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	1.4	2.2	1.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.5	2.2	1.2
Total Nitrogen (as N)	0.2	mg/L	-	1.5	2.2	1.2
Heavy Metals						
Aluminium	0.05	mg/L	-	0.68	0.24	0.15
Aluminium (filtered)	0.05	mg/L	< 0.05	0.30	0.11	< 0.05
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.011	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.32	0.29	0.82
Iron (filtered)	0.05	mg/L	< 0.05	0.08	0.09	0.22
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005	< 0.005	0.008
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.008	0.009	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			QC270	SWL15-1	SWL16-1	SWL16-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De19771	M16-De19772	M16-De19774	M16-De19775
Date Sampled			Dec 15, 2016	Dec 15, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	-	4.9	25	18
Magnesium	0.5	mg/L	-	6.8	14	7.3
Potassium	0.5	mg/L	-	6.6	24	13
Sodium	0.5	mg/L	-	45	75	43

Client Sample ID			SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-De19777	M16-De19778	M16-De19779
Date Sampled			Dec 15, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit			
Acidity (as CaCO₃)					
Acidity (as CaCO ₃)	10	mg/L	41	38	43
Chloride	1	mg/L	68	67	69
Conductivity (at 25°C)	1	uS/cm	290	300	290
pH	0.1	pH Units	3.9	3.9	3.9
Phosphate total (as P)	0.05	mg/L	0.27	0.18	0.19
Phosphorus reactive (as P)	0.05	mg/L	0.12	0.11	0.11
Sulphate (as SO ₄)	5	mg/L	12	13	13
Total Dissolved Solids	10	mg/L	250	230	250
Turbidity	1	NTU	15	3.2	26
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20
Nitrogens (speciated)					
Ammonia (as N)	0.01	mg/L	0.04	0.07	0.05
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	0.9	0.6
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	1.0	0.7
Total Nitrogen (as N)	0.2	mg/L	0.9	1.0	0.7
Heavy Metals					
Aluminium	0.05	mg/L	0.45	0.48	0.49
Aluminium (filtered)	0.05	mg/L	0.18	0.19	0.19
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	0.22	0.23
Iron (filtered)	0.05	mg/L	0.06	0.07	0.07
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M16-De19777	M16-De19778	M16-De19779
Date Sampled			Dec 15, 2016	Dec 15, 2016	Dec 15, 2016
Test/Reference	LOR	Unit			
Heavy Metals					
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.006	0.013	0.009
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	2.3	2.2	2.2
Magnesium	0.5	mg/L	6.2	6.2	6.3
Potassium	0.5	mg/L	1.6	1.6	1.6
Sodium	0.5	mg/L	36	37	37

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 20, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 20, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 20, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 20, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Dec 20, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Dec 20, 2016	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Dec 20, 2016	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 20, 2016	14 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 20, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 20, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 20, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 20, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 20, 2016	28 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Dec 16, 2016	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Dec 16, 2016	24 Hour
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Dec 20, 2016	28 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Dec 20, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 20, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 20, 2016	7 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 03, 2017	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 20, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 20, 2016	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Acidity (as CaCO ₃)	%	101		70-130	Pass	
Chloride	%	95		70-130	Pass	
Phosphate total (as P)	%	106		70-130	Pass	
Phosphorus reactive (as P)	%	126		70-130	Pass	
Sulphate (as SO ₄)	%	113		70-130	Pass	
Total Dissolved Solids	%	102		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	100		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	106		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	%	91		70-130	Pass	
Nitrate (as N)	%	91		70-130	Pass	
Nitrite (as N)	%	106		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	99		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	97		70-130	Pass	
Aluminium (filtered)	%	110		70-130	Pass	
Arsenic	%	97		70-130	Pass	
Arsenic (filtered)	%	113		70-130	Pass	
Cadmium	%	101		70-130	Pass	
Cadmium (filtered)	%	118		70-130	Pass	
Chromium	%	95		70-130	Pass	
Chromium (filtered)	%	112		70-130	Pass	
Copper	%	96		70-130	Pass	
Copper (filtered)	%	117		70-130	Pass	
Iron	%	94		70-130	Pass	
Iron (filtered)	%	100		70-130	Pass	
Lead	%	101		70-130	Pass	
Lead (filtered)	%	116		70-130	Pass	
Manganese	%	99		70-130	Pass	
Manganese (filtered)	%	115		70-130	Pass	
Mercury	%	104		70-130	Pass	
Mercury (filtered)	%	87		70-130	Pass	
Nickel	%	97		70-130	Pass	
Nickel (filtered)	%	115		70-130	Pass	
Selenium	%	98		70-130	Pass	
Selenium (filtered)	%	117		70-130	Pass	
Zinc	%	99		70-130	Pass	
Zinc (filtered)	%	119		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	100		70-130	Pass	
Magnesium	%	125		70-130	Pass	
Potassium	%	113		70-130	Pass	
Sodium	%	103		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-De17491	NCP	%	105		70-130	Pass	
Phosphate total (as P)	M16-De19955	NCP	%	126		70-130	Pass	
Sulphate (as SO4)	M16-De18490	NCP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO3)	M16-De17944	NCP	%	70		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)				Result 1				
Ammonia (as N)	M16-De18754	NCP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De18754	NCP	%	91		70-130	Pass	
Nitrate (as N)	M16-De18754	NCP	%	91		70-130	Pass	
Nitrite (as N)	M16-De18754	NCP	%	108		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De19463	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	S16-De19247	NCP	%	94		70-130	Pass	
Arsenic	S16-De19247	NCP	%	96		70-130	Pass	
Cadmium	S16-De19247	NCP	%	98		70-130	Pass	
Chromium	S16-De19247	NCP	%	92		70-130	Pass	
Copper	S16-De19247	NCP	%	88		70-130	Pass	
Iron	S16-De19247	NCP	%	89		70-130	Pass	
Lead	S16-De19247	NCP	%	93		70-130	Pass	
Lead (filtered)	S16-De15288	NCP	%	74		70-130	Pass	
Manganese	S16-De20207	NCP	%	85		70-130	Pass	
Mercury	S16-De19247	NCP	%	98		70-130	Pass	
Nickel	S16-De19247	NCP	%	91		70-130	Pass	
Selenium	S16-De19247	NCP	%	101		70-130	Pass	
Selenium (filtered)	M16-De13895	NCP	%	82		70-130	Pass	
Zinc	S16-De19247	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M16-De18227	CP	%	105		70-130	Pass	
Magnesium	M16-De18227	CP	%	107		70-130	Pass	
Potassium	M16-De18227	CP	%	98		70-130	Pass	
Sodium	M16-De18227	CP	%	79		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-De19765	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO3)	M16-De19765	CP	%	98		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	M16-De19771	CP	%	90		70-130	Pass	
Arsenic (filtered)	M16-De19771	CP	%	95		70-130	Pass	
Cadmium (filtered)	M16-De19771	CP	%	105		70-130	Pass	
Chromium (filtered)	M16-De19771	CP	%	91		70-130	Pass	
Copper (filtered)	M16-De19771	CP	%	89		70-130	Pass	
Manganese (filtered)	M16-De19771	CP	%	95		70-130	Pass	
Mercury (filtered)	M16-De19771	CP	%	109		70-130	Pass	
Nickel (filtered)	M16-De19771	CP	%	94		70-130	Pass	
Zinc (filtered)	M16-De19771	CP	%	109		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M16-De19779	CP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De18189	CP	mg/L	68	84	21	30%	Pass	
Chloride	M16-De18866	NCP	mg/L	32	32	<1	30%	Pass	
Conductivity (at 25°C)	M16-De18189	CP	uS/cm	150	150	2.0	30%	Pass	
pH	M16-De18189	CP	pH Units	4.2	4.2	pass	30%	Pass	
Sulphate (as SO ₄)	M16-De18613	NCP	mg/L	1300	1400	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De18189	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De18189	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De18189	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De18189	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-De14848	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M16-De14848	NCP	mg/L	0.18	0.17	10	30%	Pass	
Nitrate (as N)	M16-De14848	NCP	mg/L	0.18	0.17	10	30%	Pass	
Nitrite (as N)	M16-De14848	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S16-De19369	NCP	mg/L	0.003	0.003	1.0	30%	Pass	
Cadmium	S16-De19246	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S16-De19246	NCP	mg/L	0.001	0.001	<1	30%	Pass	
Nickel	S16-De19246	NCP	mg/L	0.011	0.011	2.0	30%	Pass	
Zinc (filtered)	S16-De19369	NCP	mg/L	0.044	0.047	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-De18226	CP	mg/L	110	110	6.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-De18226	CP	mg/L	14	13	2.0	30%	Pass	
Magnesium	M16-De18226	CP	mg/L	1.5	1.5	1.0	30%	Pass	
Potassium	M16-De18226	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M16-De18226	CP	mg/L	8.4	8.3	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-De19761	CP	mg/L	0.20	0.18	6.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-De19761	CP	mg/L	1.0	1.0	5.7	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Selenium (filtered)	M16-De21177	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De19762	CP	uS/cm	290	290	<1	30%	Pass	
pH	M16-De19762	CP	pH Units	5.4	5.4	pass	30%	Pass	
Phosphorus reactive (as P)	M16-De19762	CP	mg/L	0.63	0.62	1.2	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De19762	CP	mg/L	35	31	12	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De19762	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De19762	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De19762	CP	mg/L	35	31	12	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M16-De19770	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Cadmium (filtered)	M16-De19770	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-De19770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M16-De19770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M16-De19770	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead (filtered)	M16-De19770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-De19770	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-De19770	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-De19770	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-De19772	CP	uS/cm	330	340	1.0	30%	Pass
pH	M16-De19772	CP	pH Units	4.8	4.9	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De19772	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De19772	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De19772	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De19772	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M16-De19772	CP	mg/L	0.68	0.68	1.0	30%	Pass
Arsenic	M16-De19772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M16-De19772	CP	mg/L	0.001	< 0.001	19	30%	Pass
Iron	M16-De19772	CP	mg/L	0.32	0.28	13	30%	Pass
Lead	M16-De19772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M16-De19772	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M16-De19772	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Selenium	M16-De19772	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M16-De19772	CP	mg/L	0.008	0.009	8.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M16-De19772	CP	mg/L	4.9	4.9	<1	30%	Pass
Magnesium	M16-De19772	CP	mg/L	6.8	6.9	2.0	30%	Pass
Potassium	M16-De19772	CP	mg/L	6.6	6.7	1.0	30%	Pass
Sodium	M16-De19772	CP	mg/L	45	46	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De19774	CP	mg/L	19	19	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De19775	CP	mg/L	< 10	< 10	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-De19778	CP	mg/L	0.11	0.11	<1	30%	Pass
Turbidity	M16-De19778	CP	NTU	3.2	4.1	25	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M16-De19779	CP	mg/L	0.19	0.23	19	30%	Pass

Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-De19779	CP	mg/L	0.7	0.7	1.1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 16, 2016 2:30 PM**
Eurofins | mgt reference: **528499**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 16, 2016 2:30 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	528499	Due:	Dec 23, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt					

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Total Nitrogen Set (as N)	Eurofins mgt Suite B11	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X									X												X	X	X							X	X	X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X			
Brisbane Laboratory - NATA Site # 20794																																									
Perth Laboratory - NATA Site # 18217																																									
10	MW25	Dec 16, 2016		Water	M16-De19957	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW26	Dec 16, 2016		Water	M16-De19958	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC271	Dec 16, 2016		Water	M16-De19959			X		X			X			X			X			X			X						X										
13	QC272	Dec 16, 2016		Water	M16-De19960			X		X			X			X			X			X			X						X										
14	MW27	Dec 16, 2016		Water	M16-De19969	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						12	12	14	12	14	12	14	12	14	12	12	14	12	14	12	14	12	14	12	14	12	14	12	12	12	12	14	12	12	14	12	12	12	12	12	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **528499-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Dec 16, 2016**

Client Sample ID			MW9 Water	MW11 Water	MW12 Water	MW13 Water
Sample Matrix			M16-De19948	M16-De19949	M16-De19950	M16-De19951
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	23	59	24	51
Chloride	1	mg/L	17	72	48	74
Conductivity (at 25°C)	1	uS/cm	100	310	210	370
pH	0.1	pH Units	4.3	4.1	4.5	4.0
Phosphate total (as P)	0.05	mg/L	0.06	0.06	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	11	23	18	45
Total Dissolved Solids	10	mg/L	77	540	130	230
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.08	< 0.01	0.02	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	1.4	2.0	< 0.05	0.09
Nitrate (as N)	0.02	mg/L	1.4	2.0	0.04	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.6	< 0.2	0.4	0.7
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	< 0.2	0.4	0.7
Total Nitrogen (as N)	0.2	mg/L	3.1	2.0	0.4	0.8
Heavy Metals						
Aluminium	0.05	mg/L	0.61	5.6	2.4	4.7
Aluminium (filtered)	0.05	mg/L	0.17	3.7	1.6	2.6
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	0.81	0.64	1.6
Iron (filtered)	0.05	mg/L	0.12	0.06	0.20	0.36
Lead	0.001	mg/L	< 0.001	0.003	< 0.001	0.003

Client Sample ID			MW9 Water	MW11 Water	MW12 Water	MW13 Water
Sample Matrix			M16-De19948	M16-De19949	M16-De19950	M16-De19951
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.004	0.003	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.003	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	0.006	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Zinc	0.005	mg/L	0.005	< 0.005	0.008	0.007
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	4.7	0.6	1.1	2.5
Magnesium	0.5	mg/L	1.2	8.5	5.7	6.8
Potassium	0.5	mg/L	0.6	< 0.5	< 0.5	0.9
Sodium	0.5	mg/L	10	39	26	43

Client Sample ID			MW14 Water	MW15 Water	MW17 Water	MW23 Water
Sample Matrix			M16-De19952	M16-De19953	M16-De19954	M16-De19955
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	22	27	43	22
Chloride	1	mg/L	34	42	32	73
Conductivity (at 25°C)	1	uS/cm	190	300	240	400
pH	0.1	pH Units	4.6	3.7	3.9	6.3
Phosphate total (as P)	0.05	mg/L	0.16	0.08	0.08	0.17
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	22	52	43	47
Total Dissolved Solids	10	mg/L	160	180	150	290
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	45
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	45
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.02	0.15	0.04	0.04
Nitrate & Nitrite (as N)	0.05	mg/L	1.1	0.06	< 0.05	3.4
Nitrate (as N)	0.02	mg/L	1.1	0.06	0.03	3.4
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	0.4	0.4	1.5
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	0.5	0.4	1.5
Total Nitrogen (as N)	0.2	mg/L	2.1	0.6	0.4	4.9

Client Sample ID			MW14 Water	MW15 Water	MW17 Water	MW23 Water
Sample Matrix			M16-De19952	M16-De19953	M16-De19954	M16-De19955
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	2.9	0.52	1.4	2.6
Aluminium (filtered)	0.05	mg/L	0.24	0.25	0.84	1.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.001	0.003	0.002
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	0.85	1.8	< 0.05
Iron (filtered)	0.05	mg/L	0.18	0.12	0.41	< 0.05
Lead	0.001	mg/L	0.005	0.001	0.003	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.017	< 0.005	0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.006	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	7.1	5.7	3.9	31
Magnesium	0.5	mg/L	4.6	8.5	3.6	4.9
Potassium	0.5	mg/L	< 0.5	1.8	1.1	8.1
Sodium	0.5	mg/L	21	27	25	33

Client Sample ID			MW24 Water	MW25 Water	MW26 Water	QC271 Water
Sample Matrix			M16-De19956	M16-De19957	M16-De19958	M16-De19959
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	38	32	65	-
Chloride	1	mg/L	100	48	140	-
Conductivity (at 25°C)	1	uS/cm	510	300	640	-
pH	0.1	pH Units	4.1	5.0	3.7	-
Phosphate total (as P)	0.05	mg/L	0.10	0.12	0.08	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as SO4)	5	mg/L	42	38	56	-
Total Dissolved Solids	10	mg/L	340	220	520	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-

Client Sample ID			MW24 Water	MW25 Water	MW26 Water	QC271 Water
Sample Matrix			M16-De19956	M16-De19957	M16-De19958	M16-De19959
Eurofins mgt Sample No.			Dec 16, 2016	Dec 16, 2016	Dec 16, 2016	Dec 16, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.14	< 0.01	0.10	-
Nitrate & Nitrite (as N)	0.05	mg/L	7.9	6.4	0.80	-
Nitrate (as N)	0.02	mg/L	7.9	6.4	0.79	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	6.6	1.6	1.3	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.7	1.6	1.4	-
Total Nitrogen (as N)	0.2	mg/L	15	8.0	2.2	-
Heavy Metals						
Aluminium	0.05	mg/L	1.4	2.1	2.1	-
Aluminium (filtered)	0.05	mg/L	0.49	0.34	1.2	0.40
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.003	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.08	0.18	0.65	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.33	0.71
Lead	0.001	mg/L	< 0.001	0.002	0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.005	0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.010	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.4	6.3	11	-
Magnesium	0.5	mg/L	10	8.9	15	-
Potassium	0.5	mg/L	3.2	4.4	2.4	-
Sodium	0.5	mg/L	47	33	88	-

Client Sample ID			QC272	MW27
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-De19960	M16-De19969
Date Sampled			Dec 16, 2016	Dec 16, 2016
Test/Reference	LOR	Unit		
Acidity (as CaCO ₃)	10	mg/L	-	46
Chloride	1	mg/L	-	41
Conductivity (at 25°C)	1	uS/cm	-	260
pH	0.1	pH Units	-	3.8
Phosphate total (as P)	0.05	mg/L	-	0.70
Phosphorus reactive (as P)	0.05	mg/L	-	< 0.05
Sulphate (as SO ₄)	5	mg/L	-	33
Total Dissolved Solids	10	mg/L	-	270
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	-	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	-	< 20
Nitrogens (speciated)				
Ammonia (as N)	0.01	mg/L	-	0.21
Nitrate & Nitrite (as N)	0.05	mg/L	-	< 0.05
Nitrate (as N)	0.02	mg/L	-	< 0.02
Nitrite (as N)	0.02	mg/L	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	-	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.5
Total Nitrogen (as N)	0.2	mg/L	-	1.5
Heavy Metals				
Aluminium	0.05	mg/L	-	0.89
Aluminium (filtered)	0.05	mg/L	< 0.05	0.33
Arsenic	0.001	mg/L	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron	0.05	mg/L	-	1.6
Iron (filtered)	0.05	mg/L	< 0.05	0.38
Lead	0.001	mg/L	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Client Sample ID			QC272	MW27
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M16-De19960	M16-De19969
Date Sampled			Dec 16, 2016	Dec 16, 2016
Test/Reference	LOR	Unit		
Alkali Metals				
Calcium	0.5	mg/L	-	3.1
Magnesium	0.5	mg/L	-	8.8
Potassium	0.5	mg/L	-	3.7
Sodium	0.5	mg/L	-	23

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 20, 2016	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 20, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 20, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 20, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Dec 20, 2016	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Dec 20, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 20, 2016	14 Day
Nitrogens (speciated)			
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 20, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 20, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 20, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 20, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 20, 2016	28 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Dec 20, 2016	28 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Dec 20, 2016	28 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 20, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 20, 2016	7 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Dec 20, 2016	180 Day
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 20, 2016	28 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 20, 2016	7 Day

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 16, 2016 2:30 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	528499	Due:	Dec 23, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt					

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Total Nitrogen Set (as N)	Eurofins mgt Suite B11	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X									X												X	X	X							X	X	X	X				
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X					
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
External Laboratory																																											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																						
1	MW9	Dec 16, 2016		Water	M16-De19948	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	MW11	Dec 16, 2016		Water	M16-De19949	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MW12	Dec 16, 2016		Water	M16-De19950	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW13	Dec 16, 2016		Water	M16-De19951	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW14	Dec 16, 2016		Water	M16-De19952	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW15	Dec 16, 2016		Water	M16-De19953	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW17	Dec 16, 2016		Water	M16-De19954	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW23	Dec 16, 2016		Water	M16-De19955	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW24	Dec 16, 2016		Water	M16-De19956	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 16, 2016 2:30 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	528499	Due:	Dec 23, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Total Nitrogen Set (as N)	Eurofins mgt Suite B11	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X									X												X	X	X						X	X	X	X	X				
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X					
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
10	MW25	Dec 16, 2016		Water	M16-De19957	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW26	Dec 16, 2016		Water	M16-De19958	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	QC271	Dec 16, 2016		Water	M16-De19959			X		X		X		X		X		X		X		X		X		X					X												
13	QC272	Dec 16, 2016		Water	M16-De19960			X		X		X		X		X		X		X		X		X		X				X													
14	MW27	Dec 16, 2016		Water	M16-De19969	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						12	12	14	12	14	12	14	12	14	12	12	14	12	14	12	14	12	14	12	14	12	14	12	12	12	12	12	14	12	12	14	12	12	12	12	12		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	110		70-130	Pass	
Chloride	%	117		70-130	Pass	
Phosphate total (as P)	%	116		70-130	Pass	
Phosphorus reactive (as P)	%	120		70-130	Pass	
Sulphate (as SO ₄)	%	109		70-130	Pass	
Total Dissolved Solids	%	102		70-130	Pass	
LCS - % Recovery						
Alkalinity (speciated)						
Carbonate Alkalinity (as CaCO ₃)	%	112		70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	115		70-130	Pass	
LCS - % Recovery						
Nitrogens (speciated)						
Ammonia (as N)	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	%	94		70-130	Pass	
Nitrate (as N)	%	93		70-130	Pass	
Nitrite (as N)	%	102		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	100		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Aluminium	%	102		70-130	Pass	
Aluminium (filtered)	%	98		70-130	Pass	
Arsenic	%	101		70-130	Pass	
Arsenic (filtered)	%	102		70-130	Pass	
Cadmium	%	104		70-130	Pass	
Cadmium (filtered)	%	100		70-130	Pass	
Chromium	%	98		70-130	Pass	
Chromium (filtered)	%	108		70-130	Pass	
Copper	%	100		70-130	Pass	
Copper (filtered)	%	113		70-130	Pass	
Iron	%	86		70-130	Pass	
Iron (filtered)	%	105		70-130	Pass	
Lead	%	100		70-130	Pass	
Lead (filtered)	%	115		70-130	Pass	
Manganese	%	100		70-130	Pass	
Manganese (filtered)	%	102		70-130	Pass	
Mercury	%	81		70-130	Pass	
Mercury (filtered)	%	104		70-130	Pass	
Nickel	%	98		70-130	Pass	
Nickel (filtered)	%	103		70-130	Pass	
Selenium	%	110		70-130	Pass	
Selenium (filtered)	%	91		70-130	Pass	
Zinc	%	103		70-130	Pass	
Zinc (filtered)	%	102		70-130	Pass	
LCS - % Recovery						
Alkali Metals						
Calcium	%	115		70-130	Pass	
Magnesium	%	114		70-130	Pass	
Potassium	%	105		70-130	Pass	
Sodium	%	100		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Sulphate (as SO ₄)	M16-De19709	NCP	%	88		70-130	Pass	
Spike - % Recovery								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-De19948	CP	%	97		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-De19485	NCP	%	128		70-130	Pass	
Spike - % Recovery								
				Result 1				
Nitrogens (speciated)								
Ammonia (as N)	M16-De18606	NCP	%	87		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De18606	NCP	%	93		70-130	Pass	
Nitrate (as N)	M16-De18606	NCP	%	92		70-130	Pass	
Nitrite (as N)	M16-De18606	NCP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M16-De20821	NCP	%	98		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Aluminium	S16-De20066	NCP	%	100		70-130	Pass	
Aluminium (filtered)	M16-De19771	NCP	%	90		70-130	Pass	
Arsenic (filtered)	M16-De19771	NCP	%	95		70-130	Pass	
Cadmium (filtered)	M16-De19771	NCP	%	105		70-130	Pass	
Chromium (filtered)	M16-De19771	NCP	%	91		70-130	Pass	
Copper (filtered)	M16-De19771	NCP	%	89		70-130	Pass	
Manganese (filtered)	M16-De19771	NCP	%	95		70-130	Pass	
Mercury (filtered)	M16-De19771	NCP	%	109		70-130	Pass	
Nickel (filtered)	M16-De19771	NCP	%	94		70-130	Pass	
Zinc (filtered)	M16-De19771	NCP	%	109		70-130	Pass	
Spike - % Recovery								
				Result 1				
Heavy Metals								
Arsenic	M16-De19949	CP	%	94		70-130	Pass	
Cadmium	M16-De19949	CP	%	101		70-130	Pass	
Chromium	M16-De19949	CP	%	96		70-130	Pass	
Copper	M16-De19949	CP	%	94		70-130	Pass	
Iron	M16-De19949	CP	%	90		70-130	Pass	
Lead	M16-De19949	CP	%	93		70-130	Pass	
Manganese	M16-De19949	CP	%	97		70-130	Pass	
Mercury	M16-De19949	CP	%	73		70-130	Pass	
Nickel	M16-De19949	CP	%	95		70-130	Pass	
Selenium	M16-De19949	CP	%	108		70-130	Pass	
Zinc	M16-De19949	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkali Metals								
Calcium	M16-De19949	CP	%	107		70-130	Pass	
Magnesium	M16-De19949	CP	%	104		70-130	Pass	
Potassium	M16-De19949	CP	%	101		70-130	Pass	
Sodium	M16-De19949	CP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-De19950	CP	%	100		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M16-De19955	CP	%	126		70-130	Pass	
Spike - % Recovery								
				Result 1				
Alkalinity (speciated)								
Bicarbonate Alkalinity (as CaCO ₃)	M16-De19958	CP	%	93		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chloride	M16-De19969	CP	%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De19948	CP	mg/L	23	22	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-De18410	NCP	mg/L	2.2	2.2	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-De18606	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M16-De18606	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M16-De18411	NCP	mg/L	0.03	0.03	15	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-De19948	CP	mg/L	0.61	0.66	7.0	30%	Pass	
Arsenic	M16-De19948	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M16-De19948	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-De21169	NCP	mg/L	0.018	0.019	6.0	30%	Pass	
Chromium (filtered)	M16-De21177	NCP	mg/L	0.002	0.002	6.0	30%	Pass	
Copper	M16-De19948	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-De19948	CP	mg/L	1.1	1.2	7.0	30%	Pass	
Lead	M16-De19948	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M16-De19948	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-De19772	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M16-De21179	NCP	mg/L	0.011	0.011	7.0	30%	Pass	
Selenium	M16-De19948	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	M16-De21177	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M16-De19948	CP	mg/L	0.005	< 0.005	9.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-De19948	CP	mg/L	4.7	4.5	4.0	30%	Pass	
Magnesium	M16-De19948	CP	mg/L	1.2	1.2	<1	30%	Pass	
Potassium	M16-De19948	CP	mg/L	0.6	0.6	7.0	30%	Pass	
Sodium	M16-De19948	CP	mg/L	10	9.6	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De19949	CP	mg/L	59	53	10	30%	Pass	
Phosphorus reactive (as P)	M16-De19949	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M16-De19952	CP	mg/L	160	150	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-De19954	CP	mg/L	0.08	0.11	25	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-De19954	CP	mg/L	0.4	0.4	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M16-De19957	CP	mg/L	32	31	2.0	30%	Pass	
Conductivity (at 25°C)	M16-De19957	CP	uS/cm	300	300	<1	30%	Pass	
pH	M16-De19957	CP	pH Units	5.0	4.9	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M16-De19957	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M16-De19957	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M16-De19957	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M16-De19957	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De19958	CP	mg/L	65	61	6.0	30%	Pass
Chloride	M16-De19958	CP	mg/L	140	140	1.0	30%	Pass
Sulphate (as SO ₄)	M16-De19958	CP	mg/L	56	56	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-De19959	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-De19959	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Copper (filtered)	M16-De19959	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M16-De19959	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-De19959	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-De19959	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-De19959	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M16-De19969	CP	mg/L	46	46	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Dec 19, 2016 3:53 PM**
Eurofins | mgt reference: **528701**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 19, 2016 3:53 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	528701	Due:	Dec 28, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X				X													X	X	X									X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X					X	X			
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
10	MW20	Dec 19, 2016		Water	M16-De21178	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW19	Dec 19, 2016		Water	M16-De21179	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	MW18	Dec 19, 2016		Water	M16-De21180	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	MW16	Dec 19, 2016		Water	M16-De21181	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	QC273	Dec 19, 2016		Water	M16-De21182	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	QC274	Dec 19, 2016		Water	M16-De21183			X	X	X					X			X	X	X	X	X	X		X	X	X	X													X				
16	QC275	Dec 19, 2016		Water	M16-De21184			X	X	X					X			X	X	X	X	X	X		X	X	X	X													X				
Test Counts						14	14	16	14	16	14	16	14	14	14	16	14	14	16	14	16	14	16	14	14	14	16	14	16	14	14	14	14	14	14	14	14	14	14	14	16	14	14	14	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **528701-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Dec 19, 2016

Client Sample ID			MW44 Water	MW43 Water	MW42 Water	MW32 Water
Sample Matrix			M16-De21169	M16-De21170	M16-De21171	M16-De21172
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	18	93	36	29
Chloride	1	mg/L	360	1200	52	120
Conductivity (at 25°C)	1	uS/cm	1400	3900	210	410
pH	0.1	pH Units	7.6	6.6	4.3	6.4
Phosphate total (as P)	0.05	mg/L	0.25	0.12	0.06	0.40
Phosphorus reactive (as P)	0.05	mg/L	0.12	< 0.05	< 0.05	0.29
Sulphate (as SO ₄)	5	mg/L	60	82	< 5	7.6
Total Dissolved Solids	10	mg/L	1000	2700	130	270
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	210	160	< 20	30
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	210	160	< 20	30
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.14	1.1	0.25	0.28
Nitrate & Nitrite (as N)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.0	5.2	1.0	1.0
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.1	6.3	1.2	1.3
Total Nitrogen (as N)	0.2	mg/L	2.2	6.3	1.2	1.3
Heavy Metals						
Aluminium	0.05	mg/L	6.7	3.1	0.40	0.47
Aluminium (filtered)	0.05	mg/L	0.15	1.4	0.15	0.22
Arsenic	0.001	mg/L	0.007	0.005	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.007	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.018	0.014	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	0.006	0.012	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.9	0.34	0.16	0.16
Iron (filtered)	0.05	mg/L	0.30	0.07	< 0.05	< 0.05
Lead	0.001	mg/L	0.012	0.004	< 0.001	< 0.001

Client Sample ID			MW44 Water	MW43 Water	MW42 Water	MW32 Water
Sample Matrix			M16-De21169	M16-De21170	M16-De21171	M16-De21172
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Selenium	0.001	mg/L	0.008	0.006	0.003	0.001
Selenium (filtered)	0.001	mg/L	0.004	0.004	< 0.001	< 0.001
Zinc	0.005	mg/L	0.044	0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	19	70	1.7	7.4
Magnesium	0.5	mg/L	31	120	4.3	6.6
Potassium	0.5	mg/L	3.9	9.0	1.2	6.3
Sodium	0.5	mg/L	260	700	30	63

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	MW22 Water
Sample Matrix			M16-De21173	M16-De21174	M16-De21175	M16-De21176
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	62	< 10	82	80
Chloride	1	mg/L	74	34	63	73
Conductivity (at 25°C)	1	uS/cm	330	220	340	490
pH	0.1	pH Units	4.5	7.2	4.0	3.9
Phosphate total (as P)	0.05	mg/L	2.1	0.06	0.08	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	1.5	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	21	11	48	120
Total Dissolved Solids	10	mg/L	340	130	270	220
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	34	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	34	< 20	< 20
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.60	0.06	0.19	0.20
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	3.5	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	3.5	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	4.0	0.6	2.1	0.2
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.6	0.6	2.3	0.4
Total Nitrogen (as N)	0.2	mg/L	4.6	4.1	2.3	0.4

Client Sample ID			MW31 Water	MW30 Water	MW29 Water	MW22 Water
Sample Matrix			M16-De21173	M16-De21174	M16-De21175	M16-De21176
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	1.9	0.34	2.7	4.0
Aluminium (filtered)	0.05	mg/L	1.3	0.13	1.3	2.8
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	0.004	0.002
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.002	0.001
Copper	0.001	mg/L	0.001	< 0.001	0.005	< 0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Iron	0.05	mg/L	0.43	< 0.05	0.32	8.2
Iron (filtered)	0.05	mg/L	0.21	< 0.05	0.12	6.0
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	0.009
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.007
Selenium	0.001	mg/L	0.002	< 0.001	0.003	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	< 0.005	0.008	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	10	21	7.0	16
Magnesium	0.5	mg/L	6.0	2.8	12	8.0
Potassium	0.5	mg/L	7.5	0.7	2.1	1.3
Sodium	0.5	mg/L	47	20	41	42

Client Sample ID			MW21 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			M16-De21177	M16-De21178	M16-De21179	M16-De21180
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	82	70	310	39
Chloride	1	mg/L	75	55	140	70
Conductivity (at 25°C)	1	uS/cm	400	300	810	310
pH	0.1	pH Units	4.1	4.1	3.4	4.7
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	0.43	0.12
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	63	44	150	28
Total Dissolved Solids	10	mg/L	190	140	380	120
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20

Client Sample ID			MW21 Water	MW20 Water	MW19 Water	MW18 Water
Sample Matrix			M16-De21177	M16-De21178	M16-De21179	M16-De21180
Eurofins mgt Sample No.			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Date Sampled						
Test/Reference	LOR	Unit				
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.22	0.26	0.14	0.09
Nitrate & Nitrite (as N)	0.05	mg/L	1.9	1.6	1.0	0.68
Nitrate (as N)	0.02	mg/L	1.8	1.6	1.0	0.68
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	0.2	7.9	1.3
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	0.5	8.0	1.4
Total Nitrogen (as N)	0.2	mg/L	2.8	2.1	9.0	2.1
Heavy Metals						
Aluminium	0.05	mg/L	7.2	8.7	34	3.3
Aluminium (filtered)	0.05	mg/L	5.4	6.4	22	0.69
Arsenic	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.020	0.003
Chromium (filtered)	0.001	mg/L	0.002	0.001	0.005	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.9	0.58	0.25	1.6
Iron (filtered)	0.05	mg/L	0.91	0.29	< 0.05	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	0.016	0.007
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.006	0.011	0.002
Nickel (filtered)	0.001	mg/L	0.003	0.005	0.008	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.011	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	1.2	< 0.5	2.0	11
Magnesium	0.5	mg/L	3.1	3.0	5.3	5.2
Potassium	0.5	mg/L	2.4	< 0.5	0.5	1.2
Sodium	0.5	mg/L	36	31	81	32

Client Sample ID			MW16	QC273	QC274	QC275
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De21181	M16-De21182	M16-De21183	M16-De21184
Date Sampled			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	64	44	-	-
Chloride	1	mg/L	76	69	-	-
Conductivity (at 25°C)	1	uS/cm	380	310	-	-
pH	0.1	pH Units	4.2	4.5	-	-
Phosphate total (as P)	0.05	mg/L	0.06	0.09	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as SO ₄)	5	mg/L	60	29	-	-
Total Dissolved Solids	10	mg/L	190	100	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	-	-
Nitrogens (speciated)						
Ammonia (as N)	0.01	mg/L	0.09	0.07	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	2.1	0.48	-	-
Nitrate (as N)	0.02	mg/L	2.1	0.48	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.6	1.8	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	1.9	-	-
Total Nitrogen (as N)	0.2	mg/L	2.8	2.4	-	-
Heavy Metals						
Aluminium	0.05	mg/L	7.6	4.1	-	-
Aluminium (filtered)	0.05	mg/L	3.8	0.65	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.004	-	-
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	1.9	-	-
Iron (filtered)	0.05	mg/L	0.30	0.08	< 0.05	< 0.05
Lead	0.001	mg/L	0.010	0.003	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.002	-	-
Nickel (filtered)	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MW16	QC273	QC274	QC275
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M16-De21181	M16-De21182	M16-De21183	M16-De21184
Date Sampled			Dec 19, 2016	Dec 19, 2016	Dec 19, 2016	Dec 19, 2016
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	3.5	10	-	-
Magnesium	0.5	mg/L	7.2	5.0	-	-
Potassium	0.5	mg/L	1.6	1.2	-	-
Sodium	0.5	mg/L	46	31	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Dec 21, 2016	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Dec 21, 2016	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Dec 21, 2016	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Dec 21, 2016	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Dec 21, 2016	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Dec 21, 2016	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Dec 21, 2016	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Dec 21, 2016	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Dec 21, 2016	14 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Dec 21, 2016	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Dec 21, 2016	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Dec 21, 2016	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Dec 21, 2016	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Dec 21, 2016	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Dec 21, 2016	7 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 21, 2016	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Dec 21, 2016	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Dec 21, 2016	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Dec 21, 2016	180 Day

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Dec 19, 2016 3:53 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	528701	Due:	Dec 28, 2016
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X				X													X	X	X									X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X					X	X			
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
10	MW20	Dec 19, 2016		Water	M16-De21178	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW19	Dec 19, 2016		Water	M16-De21179	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	MW18	Dec 19, 2016		Water	M16-De21180	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	MW16	Dec 19, 2016		Water	M16-De21181	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	QC273	Dec 19, 2016		Water	M16-De21182	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	QC274	Dec 19, 2016		Water	M16-De21183			X	X	X					X			X			X		X		X	X	X	X												X					
16	QC275	Dec 19, 2016		Water	M16-De21184			X	X	X					X			X			X		X		X	X	X	X													X				
Test Counts						14	14	16	14	16	14	16	14	14	14	16	14	14	16	14	16	14	16	14	14	14	16	14	16	14	14	14	14	14	14	14	14	14	14	14	16	14	14		

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Chloride	mg/L	< 1			1	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Nitrogens (speciated)							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acidity (as CaCO ₃)	%	102			70-130	Pass	
Chloride	%	123			70-130	Pass	
Phosphate total (as P)	%	122			70-130	Pass	
Phosphorus reactive (as P)	%	116			70-130	Pass	
Sulphate (as SO ₄)	%	121			70-130	Pass	
Total Dissolved Solids	%	92			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	104			70-130	Pass	
Total Alkalinity (as CaCO ₃)	%	109			70-130	Pass	
LCS - % Recovery							
Nitrogens (speciated)							
Ammonia (as N)	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	%	93			70-130	Pass	
Nitrate (as N)	%	93			70-130	Pass	
Nitrite (as N)	%	98			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	94			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	103			70-130	Pass	
Aluminium (filtered)	%	114			70-130	Pass	
Arsenic	%	97			70-130	Pass	
Arsenic (filtered)	%	116			70-130	Pass	
Cadmium	%	101			70-130	Pass	
Cadmium (filtered)	%	114			70-130	Pass	
Chromium	%	94			70-130	Pass	
Chromium (filtered)	%	125			70-130	Pass	
Copper	%	96			70-130	Pass	
Copper (filtered)	%	129			70-130	Pass	
Iron	%	82			70-130	Pass	
Iron (filtered)	%	110			70-130	Pass	
Lead	%	99			70-130	Pass	
Lead (filtered)	%	98			70-130	Pass	
Manganese	%	97			70-130	Pass	
Manganese (filtered)	%	117			70-130	Pass	
Mercury	%	71			70-130	Pass	
Mercury (filtered)	%	104			70-130	Pass	
Nickel	%	94			70-130	Pass	
Nickel (filtered)	%	117			70-130	Pass	
Selenium	%	103			70-130	Pass	
Selenium (filtered)	%	110			70-130	Pass	
Zinc	%	100			70-130	Pass	
Zinc (filtered)	%	118			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	115			70-130	Pass	
Magnesium	%	114			70-130	Pass	
Potassium	%	105			70-130	Pass	
Sodium	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M16-De21234	NCP	%	86		70-130	Pass	
Phosphate total (as P)	M16-De25263	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M16-De22213	NCP	%	97		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	S16-De20066	NCP	%	100		70-130	Pass	
Aluminium (filtered)	M16-De19771	NCP	%	90		70-130	Pass	
Arsenic (filtered)	M16-De19771	NCP	%	95		70-130	Pass	
Cadmium (filtered)	M16-De19771	NCP	%	105		70-130	Pass	
Chromium (filtered)	M16-De19771	NCP	%	91		70-130	Pass	
Copper (filtered)	M16-De19771	NCP	%	89		70-130	Pass	
Manganese (filtered)	M16-De19771	NCP	%	95		70-130	Pass	
Mercury	S16-De20066	NCP	%	137		70-130	Fail	Q08
Mercury (filtered)	M16-De19771	NCP	%	109		70-130	Pass	
Nickel (filtered)	M16-De19771	NCP	%	94		70-130	Pass	
Zinc (filtered)	M16-De19771	NCP	%	109		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Magnesium	M16-De14920	NCP	%	100		70-130	Pass	
Sodium	M16-De14920	NCP	%	95		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M16-De21170	CP	%	107		70-130	Pass	
Cadmium	M16-De21170	CP	%	105		70-130	Pass	
Chromium	M16-De21170	CP	%	112		70-130	Pass	
Copper	M16-De21170	CP	%	94		70-130	Pass	
Iron	M16-De21170	CP	%	100		70-130	Pass	
Lead	M16-De21170	CP	%	98		70-130	Pass	
Manganese	M16-De21170	CP	%	108		70-130	Pass	
Nickel	M16-De21170	CP	%	97		70-130	Pass	
Selenium	M16-De21170	CP	%	114		70-130	Pass	
Zinc	M16-De21170	CP	%	90		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M16-De21170	CP	%	130		70-130	Pass	
Potassium	M16-De21170	CP	%	112		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M16-De21171	CP	%	94		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-De21171	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De21171	CP	%	89		70-130	Pass	
Nitrate (as N)	M16-De21171	CP	%	88		70-130	Pass	
Nitrite (as N)	M16-De21171	CP	%	95		70-130	Pass	
Spike - % Recovery								
Nitrogens (speciated)								
				Result 1				
Ammonia (as N)	M16-De21172	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	M16-De21172	CP	%	88		70-130	Pass	
Nitrate (as N)	M16-De21172	CP	%	88		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrite (as N)	M16-De21172	CP	%	96			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Total Kjeldahl Nitrogen (as N)	M16-De21173	CP	%	92			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M16-De21176	CP	%	99			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M16-De21176	CP	%	108			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO ₄)	M16-De21178	CP	%	110			70-130	Pass	
Spike - % Recovery									
Nitrogens (speciated)				Result 1					
Ammonia (as N)	M16-De21181	CP	%	88			70-130	Pass	
Nitrate & Nitrite (as N)	M16-De21181	CP	%	83			70-130	Pass	
Nitrate (as N)	M16-De21181	CP	%	83			70-130	Pass	
Nitrite (as N)	M16-De21181	CP	%	98			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M16-De21169	CP	uS/cm	1400	1400	1.0	30%	Pass	
pH	M16-De21169	CP	pH Units	7.6	7.6	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De21169	CP	mg/L	210	210	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De21169	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De21169	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De21169	CP	mg/L	210	210	3.0	30%	Pass	
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M16-De21025	NCP	mg/L	15	17	8.3	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-De21169	CP	mg/L	6.7	7.4	10	30%	Pass	
Aluminium (filtered)	M16-De15113	NCP	mg/L	< 0.05	**	14	30%	Pass	
Arsenic	M16-De21169	CP	mg/L	0.007	0.007	1.0	30%	Pass	
Cadmium	M16-De21169	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M16-De21169	CP	mg/L	0.018	0.019	6.0	30%	Pass	
Copper	M16-De21169	CP	mg/L	0.005	0.006	2.0	30%	Pass	
Copper (filtered)	S16-De17030	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M16-De21169	CP	mg/L	1.9	2.1	10	30%	Pass	
Lead	M16-De21169	CP	mg/L	0.012	0.013	8.0	30%	Pass	
Manganese	M16-De21169	CP	mg/L	0.006	0.005	2.0	30%	Pass	
Mercury	M16-De21169	CP	mg/L	0.0001	0.0001	18	30%	Pass	
Nickel	M16-De21169	CP	mg/L	0.003	0.003	<1	30%	Pass	
Selenium	M16-De21169	CP	mg/L	0.008	0.006	16	30%	Pass	
Zinc	M16-De21169	CP	mg/L	0.044	0.046	4.0	30%	Pass	
Zinc (filtered)	M16-De15113	NCP	mg/L	0.005	**	3.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-De21169	CP	mg/L	19	19	2.0	30%	Pass	
Magnesium	M16-De21169	CP	mg/L	31	32	2.0	30%	Pass	
Potassium	M16-De21169	CP	mg/L	3.9	4.0	2.0	30%	Pass	
Sodium	M16-De21169	CP	mg/L	260	260	1.0	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M16-De21170	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-De21171	CP	mg/L	0.25	0.23	8.0	30%	Pass
Nitrate & Nitrite (as N)	M16-De21171	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-De21171	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-De21171	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M16-De21172	CP	mg/L	120	110	6.0	30%	Pass
Sulphate (as SO4)	M16-De21172	CP	mg/L	7.6	7.4	2.3	30%	Pass
Duplicate								
Nitrogens (speciated)				Result 1	Result 2	RPD		
Ammonia (as N)	M16-De21172	CP	mg/L	0.28	0.27	4.0	30%	Pass
Nitrate & Nitrite (as N)	M16-De21172	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M16-De21172	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M16-De21172	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M16-De21173	CP	mg/L	62	61	2.0	30%	Pass
Conductivity (at 25°C)	M16-De21173	CP	uS/cm	330	330	3.0	30%	Pass
pH	M16-De21173	CP	pH Units	4.5	4.8	pass	30%	Pass
Total Dissolved Solids	M16-De21173	CP	mg/L	340	360	6.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-De21173	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-De21173	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-De21173	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-De21173	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-De21175	CP	uS/cm	340	340	<1	30%	Pass
pH	M16-De21175	CP	pH Units	4.0	4.0	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M16-De21175	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO3)	M16-De21175	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M16-De21175	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M16-De21175	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M16-De21177	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M16-De21177	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	M16-De21177	CP	mg/L	0.002	0.002	6.0	30%	Pass
Iron (filtered)	M16-De21177	CP	mg/L	0.91	0.85	7.0	30%	Pass
Lead (filtered)	M16-De21177	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M16-De21177	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M16-De21177	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M16-De21177	CP	mg/L	0.003	0.003	13	30%	Pass
Selenium (filtered)	M16-De21177	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M16-De21179	CP	uS/cm	810	810	<1	30%	Pass
pH	M16-De21179	CP	pH Units	3.4	3.4	pass	30%	Pass

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M16-De21179	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M16-De21179	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M16-De21179	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M16-De21179	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M16-De21179	CP	mg/L	34	37	11	30%	Pass	
Arsenic	M16-De21179	CP	mg/L	0.001	0.001	15	30%	Pass	
Cadmium	M16-De21179	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Copper	M16-De21179	CP	mg/L	0.002	0.003	9.0	30%	Pass	
Iron	M16-De21179	CP	mg/L	0.25	0.30	18	30%	Pass	
Manganese	M16-De21179	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M16-De21179	CP	mg/L	0.0002	0.0002	6.0	30%	Pass	
Nickel	M16-De21179	CP	mg/L	0.011	0.011	7.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M16-De21179	CP	mg/L	2.0	2.0	3.0	30%	Pass	
Magnesium	M16-De21179	CP	mg/L	5.3	5.3	<1	30%	Pass	
Potassium	M16-De21179	CP	mg/L	0.5	< 0.5	11	30%	Pass	
Sodium	M16-De21179	CP	mg/L	81	80	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M16-De21180	CP	mg/L	0.12	< 0.05	140	30%	Fail	Q15
Duplicate									
Nitrogens (speciated)				Result 1	Result 2	RPD			
Ammonia (as N)	M16-De21181	CP	mg/L	0.09	0.08	8.0	30%	Pass	
Nitrate & Nitrite (as N)	M16-De21181	CP	mg/L	2.1	2.1	<1	30%	Pass	
Nitrate (as N)	M16-De21181	CP	mg/L	2.1	2.1	<1	30%	Pass	
Nitrite (as N)	M16-De21181	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M16-De21182	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1612105**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : EN/007/14
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 14-Dec-2016 17:40
Date Analysis Commenced : 14-Dec-2016
Issue Date : 21-Dec-2016 14:16



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC METALS (f&t) conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- MW006:estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC262	QC263	QC264	QC265	----
Client sampling date / time				14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----	
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----	
				Result	Result	Result	Result	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.51	7.60	8.01	7.85	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	4440	2550	2250	1740	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2490	1570	1870	1110	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	3.7	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	9	228	206	212	----	
Total Alkalinity as CaCO3	----	1	mg/L	9	228	206	212	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	8	22	9	13	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	21	41	16	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1280	721	637	484	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	14	88	61	65	----	
Magnesium	7439-95-4	1	mg/L	99	58	45	40	----	
Sodium	7440-23-5	1	mg/L	778	359	339	243	----	
Potassium	7440-09-7	1	mg/L	15	7	5	6	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00006	<0.00004	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	38	13	22	18	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.5	0.3	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
Chromium	7440-47-3	0.2	µg/L	<0.2	0.8	0.3	<0.2	----	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC262	QC263	QC264	QC265	----
Client sampling date / time				14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----	
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----	
				Result	Result	Result	Result	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	50	109	141	14	----	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Manganese	7439-96-5	0.5	µg/L	13.9	6.4	17.3	3.3	----	
Nickel	7440-02-0	0.5	µg/L	1.5	<0.5	<0.5	<0.5	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	<0.2	<0.2	----	
Zinc	7440-66-6	1	µg/L	<1	1	<1	2	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	148	2470	28400	6720	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	1.2	16.1	21.0	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.12	<0.05	----	
Chromium	7440-47-3	0.2	µg/L	0.3	5.0	54.1	11.0	----	
Copper	7440-50-8	0.5	µg/L	<0.5	2.7	7.8	3.0	----	
Iron	7439-89-6	2	µg/L	868	2930	10800	38500	----	
Lead	7439-92-1	0.1	µg/L	<0.1	2.8	30.7	12.9	----	
Manganese	7439-96-5	0.5	µg/L	16.6	9.4	31.1	6.6	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	1.0	5.8	2.9	----	
Nickel	7440-02-0	0.5	µg/L	1.7	2.8	27.4	17.6	----	
Zinc	7440-66-6	1	µg/L	1	54	42	11	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.47	0.17	0.26	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	1.0	0.3	0.4	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.2	1.0	0.3	0.4	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.02	0.09	0.11	0.10	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.06	0.10	0.08	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC262	QC263	QC264	QC265	----
Client sampling date / time				14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	14-Dec-2016 00:00	----	
Compound	CAS Number	LOR	Unit	EP1612105-001	EP1612105-002	EP1612105-003	EP1612105-004	-----	
				Result	Result	Result	Result	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	39.4	25.3	22.9	18.2	----	
Total Cations	----	0.01	meq/L	43.1	25.0	21.6	17.2	----	
Ionic Balance	----	0.01	%	4.46	0.74	2.96	2.71	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	~33	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	~33	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1612105	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Dec-2016
Order number	: ----	Date Analysis Commenced	: 14-Dec-2016
C-O-C number	: ----	Issue Date	: 21-Dec-2016
Sampler	: ----		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 4		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 693877)									
EP1612105-002	QC263	EA005-P: pH Value	----	0.01	pH Unit	7.60	7.67	0.917	0% - 20%
EP1612049-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.16	7.18	0.279	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 693879)									
EP1612108-018	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1280	1290	1.17	0% - 20%
EP1612105-002	QC263	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2550	2570	0.762	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 698339)									
EP1612066-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	92000	96700	5.00	0% - 20%
EP1612105-003	QC264	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1870	2000	6.87	0% - 20%
EA045: Turbidity (QC Lot: 694279)									
EP1612105-001	QC262	EA045: Turbidity	----	0.1	NTU	3.7	3.6	0.00	0% - 20%
EP1612167-002	Anonymous	EA045: Turbidity	----	0.1	NTU	83.0	83.2	0.240	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 693878)									
EP1612063-022	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EP1612105-002	QC263	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	228	226	0.889	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	228	226	0.889	0% - 20%
ED038A: Acidity (QC Lot: 695516)									
EP1612093-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	10	10	0.00	0% - 50%
EP1612105-002	QC263	ED038: Acidity as CaCO3	----	1	mg/L	22	23	4.44	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 692273)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 692273) - continued									
EP1612105-001	QC262	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	132	11.9	0% - 20%
EP1612105-003	QC264	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	41	41	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 692276)									
EP1612105-001	QC262	ED045G: Chloride	16887-00-6	1	mg/L	1280	1330	3.94	0% - 20%
EP1612105-003	QC264	ED045G: Chloride	16887-00-6	1	mg/L	637	636	0.203	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 694041)									
EP1612022-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	58	57	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	50	50	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	79	79	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	11	11	0.00	0% - 50%
EP1612074-005	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	116	115	0.950	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	12	12	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	69	68	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 698961)									
EP1611848-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 695826)									
EP1612105-002	QC263	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1629000-007	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	0.00010	0.00012	17.8	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 697069)									
EP1612105-001	QC262	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	13.9	14.0	0.00	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	1.5	1.6	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	1	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	38	39	3.21	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 697070)									
EP1612105-001	QC262	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	50	50	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697071)									
EP1612105-001	QC262	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.3	0.4	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	16.6	16.7	0.737	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697071) - continued									
EP1612105-001	QC262	EG094A-T: Nickel	7440-02-0	0.5	µg/L	1.7	1.8	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	1	1	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	148	152	2.94	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 697072)									
EP1612105-001	QC262	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	868	894	3.00	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 692287)									
EP1612105-001	QC262	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 692274)									
EP1612105-001	QC262	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-003	QC264	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 692286)									
EP1612107-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-001	QC262	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 693776)									
EP1612105-001	QC262	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 693777)									
EP1612105-001	QC262	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.02	0.02	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 692275)									
EP1612105-001	QC262	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1612105-003	QC264	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.10	0.10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 693877)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 693879)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 698339)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	83	111	
				<10	1000 mg/L	101	70	130	
EA045: Turbidity (QCLot: 694279)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.4	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 693878)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	105	90	106	
ED038A: Acidity (QCLot: 695516)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	105	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 692273)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	89	113	
				<1	100 mg/L	96.3	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 692276)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.4	84	120	
				<1	1000 mg/L	102	84	110	
ED093F: Dissolved Major Cations (QCLot: 694041)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.4	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	102	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	94.3	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	94.0	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 698961)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	95.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 695826)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	102	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697069)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	104	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.4	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	104	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.1	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	102	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	112	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	90.2	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	111	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697070)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	112	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	106	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697071)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	109	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	106	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	92.8	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	98.8	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	107	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.8	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	86.7	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697072)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	107	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	79.5	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 692287)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 692274)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 692286)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	108	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 693776)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.2	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 693777)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	79.0	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 692275)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	103	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 692273)							
EP1612105-002	QC263	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	104	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 692276)							
EP1612105-002	QC263	ED045G: Chloride	16887-00-6	1000 mg/L	91.6	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 698961)							
EP1611848-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	85.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 695826)							
EP1612105-001	QC262	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	83.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 697069)							
EP1612105-002	QC263	EG094A-F: Arsenic	7440-38-2	50 µg/L	129	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	121	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	119	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	121	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	91.4	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	112	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	119	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 697071)							
EP1612105-002	QC263	EG094A-T: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	124	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	124	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	127	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	121	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	115	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	121	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	114	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 692287)							
EP1612105-002	QC263	EK055G: Ammonia as N	7664-41-7	1 mg/L	92.7	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 692274)							
EP1612105-002	QC263	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	112	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 692286)							
EP1612105-002	QC263	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	120	70	130

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 Work Order : EP1612105
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 693776)							
EP1612105-002	QC263	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	100	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 693777)							
EP1612105-002	QC263	EK067G: Total Phosphorus as P	----	1 mg/L	90.6	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 692275)							
EP1612105-002	QC263	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	106	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1612105	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Dec-2016
Site	: ----	Issue Date	: 21-Dec-2016
Sampler	: ----	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Miscellaneous Plastic bottle -unpreserved						
QC262,	QC263,	----	----	----	15-Dec-2016	14-Dec-2016
QC264,	QC265					1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA005-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	14-Dec-2016
QC264,	QC265						*
EA010P: Conductivity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (EA010-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	11-Jan-2017
QC264,	QC265						✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle -unpreserved (EA015H)							
QC262,	QC263,	14-Dec-2016	----	----	----	19-Dec-2016	21-Dec-2016
QC264,	QC265						✓
EA045: Turbidity							
Miscellaneous Plastic bottle -unpreserved (EA045)							
QC262		14-Dec-2016	----	----	----	15-Dec-2016	16-Dec-2016
							✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle -unpreserved (ED037-P)							
QC262,	QC263,	14-Dec-2016	----	----	----	15-Dec-2016	28-Dec-2016
QC264,	QC265						✓
ED038A: Acidity							
Miscellaneous Plastic bottle -unpreserved (ED038)							
QC262,	QC263,	14-Dec-2016	----	----	----	16-Dec-2016	28-Dec-2016
QC264,	QC265						✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Miscellaneous Plastic bottle -unpreserved (ED041G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
ED045G: Chloride by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (ED045G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
ED093F: Dissolved Major Cations								
Miscellaneous Plastic bottle -unpreserved (ED093F) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	16-Dec-2016	21-Dec-2016	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	20-Dec-2016	11-Jan-2017	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	20-Dec-2016	11-Jan-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	19-Dec-2016	12-Jun-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	12-Jun-2017	✓	19-Dec-2016	12-Jun-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK055G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Miscellaneous Plastic bottle -unpreserved (EK057G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	16-Dec-2016	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK059G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	11-Jan-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Miscellaneous Sulphuric preserved (EK061G) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	11-Jan-2017	✓	19-Dec-2016	11-Jan-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Miscellaneous Sulphuric preserved (EK067G) QC262, QC264,	QC263, QC265	14-Dec-2016	19-Dec-2016	11-Jan-2017	✓	19-Dec-2016	11-Jan-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Miscellaneous Plastic bottle -unpreserved (EK071G) QC262, QC264,	QC263, QC265	14-Dec-2016	----	----	----	14-Dec-2016	16-Dec-2016	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC262		14-Dec-2016	----	----	----	14-Dec-2016	15-Dec-2016	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 17, 2017 2:13 PM**
Eurofins | mgt reference: **530725**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **530725-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jan 17, 2017

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M17-Ja08030	M17-Ja08031	M17-Ja08032	M17-Ja08033
Eurofins mgt Sample No.			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	18	29	41	24
Ammonia (as N)	0.01	mg/L	0.05	0.02	0.11	0.02
Chloride	1	mg/L	33	93	26	26
Conductivity (at 25°C)	1	uS/cm	550	620	400	200
Nitrate & Nitrite (as N)	0.05	mg/L	13	0.18	1.4	< 0.05
Nitrate (as N)	0.02	mg/L	13	0.17	1.4	0.03
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	0.07	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.0	0.9	0.7	0.6
pH	0.1	pH Units	7.7	7.0	6.6	7.0
Phosphate total (as P)	0.05	mg/L	0.12	0.10	0.07	0.06
Phosphorus reactive (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	34	41	< 5	< 5
Total Dissolved Solids	10	mg/L	370	420	^{Q19} 300	^{Q19} 180
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.1	0.9	0.8	0.6
Total Nitrogen (as N)	0.2	mg/L	15	1.1	2.2	0.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	150	130	140	58
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	150	130	140	58
Heavy Metals						
Aluminium	0.05	mg/L	0.45	0.76	0.15	0.14
Aluminium (filtered)	0.05	mg/L	< 0.05	0.13	0.11	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.06	0.54	< 0.05	< 0.05
Iron (filtered)	0.05	mg/L	< 0.05	0.14	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M17-Ja08030	M17-Ja08031	M17-Ja08032	M17-Ja08033
Eurofins mgt Sample No.			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.015	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.011	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	0.038	< 0.005	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	60	50	50	20
Magnesium	0.5	mg/L	6.6	7.8	6.8	2.1
Potassium	0.5	mg/L	22	0.8	3.0	< 0.5
Sodium	0.5	mg/L	35	69	15	15

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M17-Ja08034	M17-Ja08035	M17-Ja08036	M17-Ja08037
Eurofins mgt Sample No.			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	50	79	71	< 10
Ammonia (as N)	0.01	mg/L	0.62	0.17	0.03	0.01
Chloride	1	mg/L	45	250	7.3	13
Conductivity (at 25°C)	1	uS/cm	210	1200	130	110
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.51	3.9	4.0
Nitrate (as N)	0.02	mg/L	< 0.02	0.50	3.9	4.0
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.6	1.0	0.9
pH	0.1	pH Units	5.2	4.9	5.1	5.5
Phosphate total (as P)	0.05	mg/L	0.11	< 0.05	0.06	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	< 5	170	17	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 190	700	^{Q19} 100	^{Q19} 93
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.1	0.8	1.0	0.9
Total Nitrogen (as N)	0.2	mg/L	1.1	1.3	4.9	4.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.89	2.2	0.98	0.66
Aluminium (filtered)	0.05	mg/L	0.83	1.7	0.40	0.11
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M17-Ja08034	M17-Ja08035	M17-Ja08036	M17-Ja08037
Eurofins mgt Sample No.			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.37	0.29	5.3	0.08
Iron (filtered)	0.05	mg/L	0.33	0.14	0.51	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	1.8	25	9.1	8.4
Magnesium	0.5	mg/L	5.3	27	2.0	1.4
Potassium	0.5	mg/L	1.0	21	1.6	0.5
Sodium	0.5	mg/L	26	150	6.1	7.6

Client Sample ID			MW55 Water	QC278 Water	QC276 Water	QC277 Water
Sample Matrix			M17-Ja08038	M17-Ja08039	M17-Ja08040	M17-Ja08041
Eurofins mgt Sample No.			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	-
Toluene	0.001	mg/L	< 0.001	-	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-	-
Xylenes - Total	0.003	mg/L	< 0.003	-	-	-
4-Bromofluorobenzene (surr.)	1	%	114	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	-	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	-	-

Client Sample ID			MW55	QC278	QC276	QC277
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08038	M17-Ja08039	M17-Ja08040	M17-Ja08041
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	-	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	51	14	-	-
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	-	-
Chloride						
Chloride	1	mg/L	89	30	-	-
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	980	540	-	-
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	8.9	24	-	-
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	8.7	24	-	-
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	0.18	< 0.02	-	-
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	2.5	2.0	-	-
pH						
pH	0.1	pH Units	6.5	7.2	-	-
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	< 0.05	0.12	-	-
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.07	-	-
Sulphate (as SO4)						
Sulphate (as SO4)	5	mg/L	220	31	-	-
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	640	380	-	-
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.5	2.0	-	-
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	11	26	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	110	140	-	-
Carbonate Alkalinity (as CaCO3)						
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO3)						
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO3)						
Total Alkalinity (as CaCO3)	20	mg/L	110	140	-	-
Heavy Metals						
Aluminium						
Aluminium	0.05	mg/L	0.52	0.29	-	-
Aluminium (filtered)						
Aluminium (filtered)	0.05	mg/L	0.16	< 0.05	< 0.05	< 0.05
Arsenic						
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium						
Chromium	0.001	mg/L	0.003	< 0.001	-	-
Chromium (filtered)						
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper						
Copper	0.001	mg/L	0.001	0.001	-	-
Copper (filtered)						
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron						
Iron	0.05	mg/L	0.20	< 0.05	-	-
Iron (filtered)						
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead						
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese						
Manganese	0.005	mg/L	< 0.005	< 0.005	-	-
Manganese (filtered)						
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury						
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)						
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel						
Nickel	0.001	mg/L	0.001	< 0.001	-	-
Nickel (filtered)						
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium						
Selenium	0.001	mg/L	0.001	< 0.001	-	-
Selenium (filtered)						
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc						
Zinc	0.005	mg/L	0.012	0.009	-	-
Zinc (filtered)						
Zinc (filtered)	0.005	mg/L	0.008	0.006	< 0.005	< 0.005

Client Sample ID			MW55	QC278	QC276	QC277
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08038	M17-Ja08039	M17-Ja08040	M17-Ja08041
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	71	56	-	-
Magnesium	0.5	mg/L	16	6.4	-	-
Potassium	0.5	mg/L	20	21	-	-
Sodium	0.5	mg/L	84	34	-	-

Client Sample ID			SWL1-1	SWL1-2	SWL1-3	SWL2-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08042	M17-Ja08043	M17-Ja08044	M17-Ja08045
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.06	0.01	< 0.01	0.01
Chloride	1	mg/L	81	83	99	64
Conductivity (at 25°C)	1	uS/cm	390	430	460	420
Nitrate & Nitrite (as N)	0.05	mg/L	0.17	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.16	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.1	0.6	0.4
pH	0.1	pH Units	7.5	7.0	7.2	7.7
Phosphate total (as P)	0.05	mg/L	< 0.05	0.27	0.11	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	46	35	< 5	39
Total Dissolved Solids	10	mg/L	260	260	310	240
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.1	0.6	0.4
Total Nitrogen (as N)	0.2	mg/L	0.7	1.1	0.6	0.4
Turbidity	1	NTU	1.9	600	12	< 1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	50	57	100	60
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	50	57	100	60
Heavy Metals						
Aluminium	0.05	mg/L	0.08	0.06	< 0.05	0.15
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.08
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.23	0.55	0.27	0.11
Iron (filtered)	0.05	mg/L	0.08	0.12	< 0.05	0.08
Lead	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.017	0.048	0.11	< 0.005

Client Sample ID			SWL1-1	SWL1-2	SWL1-3	SWL2-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08042	M17-Ja08043	M17-Ja08044	M17-Ja08045
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese (filtered)	0.005	mg/L	0.013	0.041	0.035	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.009	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	15	16	25	15
Magnesium	0.5	mg/L	12	12	11	12
Potassium	0.5	mg/L	5.2	6.0	6.9	3.9
Sodium	0.5	mg/L	54	58	65	50
Pathogens						
E.coli	1	MPN/100mL	460	30	62	20
Thermotolerant Coliforms	1	MPN/100mL	4100	560	160	41

Client Sample ID			SWL2-2	SWL2-3	SWL3-1	SWL3-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08046	M17-Ja08047	M17-Ja08048	M17-Ja08049
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.01	0.02	0.02	< 0.01
Chloride	1	mg/L	64	66	68	69
Conductivity (at 25°C)	1	uS/cm	370	430	420	430
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	0.5
pH	0.1	pH Units	7.6	7.7	8.0	7.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	40	39	26	26
Total Dissolved Solids	10	mg/L	240	240	250	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	0.5
Total Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	0.5
Turbidity	1	NTU	1.1	< 1	1.8	1.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	53	58	86	86
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	53	58	86	86

Client Sample ID			SWL2-2	SWL2-3	SWL3-1	SWL3-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08046	M17-Ja08047	M17-Ja08048	M17-Ja08049
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.15	0.32	0.33
Aluminium (filtered)	0.05	mg/L	0.10	0.08	0.18	0.17
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.10	0.10	0.14	0.14
Iron (filtered)	0.05	mg/L	0.08	0.08	0.12	0.12
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	15	15	18	18
Magnesium	0.5	mg/L	12	12	10	10
Potassium	0.5	mg/L	3.8	3.8	2.5	2.4
Sodium	0.5	mg/L	52	48	51	50
Pathogens						
E.coli	1	MPN/100mL	20	30	10	30
Thermotolerant Coliforms	1	MPN/100mL	63	30	31	52

Client Sample ID			SWL3-3	SWL4-1	SWL4-2	SWL4-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08050	M17-Ja08051	M17-Ja08052	M17-Ja08053
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.01	0.04	< 0.01	< 0.01
Chloride	1	mg/L	69	140	150	170
Conductivity (at 25°C)	1	uS/cm	430	670	670	710
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.32	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.32	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.3	0.6
pH	0.1	pH Units	7.3	6.9	7.1	7.2

Client Sample ID			SWL3-3	SWL4-1	SWL4-2	SWL4-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja08050	M17-Ja08051	M17-Ja08052	M17-Ja08053
Date Sampled			Jan 17, 2017	Jan 17, 2017	Jan 17, 2017	Jan 17, 2017
Test/Reference	LOR	Unit				
Phosphate total (as P)	0.05	mg/L	< 0.05	0.06	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	43	73	67	16
Total Dissolved Solids	10	mg/L	270	390	400	400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.3	0.6
Total Nitrogen (as N)	0.2	mg/L	0.5	0.7	0.3	0.6
Turbidity	1	NTU	1.9	9.2	15	3.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	60	< 20	23	89
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	60	< 20	23	89
Heavy Metals						
Aluminium	0.05	mg/L	0.32	0.16	0.09	0.12
Aluminium (filtered)	0.05	mg/L	0.18	0.07	< 0.05	0.06
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.14	0.68	0.28	0.86
Iron (filtered)	0.05	mg/L	0.12	0.07	0.07	0.52
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.007	< 0.005	0.007
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.005	0.011	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	18	17	17	18
Magnesium	0.5	mg/L	10	16	16	17
Potassium	0.5	mg/L	2.4	5.6	12	6.3
Sodium	0.5	mg/L	52	82	87	89
Pathogens						
E.coli	1	MPN/100mL	10	85	41	10
Thermotolerant Coliforms	1	MPN/100mL	63	510	340	880

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Jan 19, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jan 18, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jan 18, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Jan 19, 2017	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 18, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 18, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 18, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 18, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 18, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 18, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 18, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 18, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jan 18, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 18, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 19, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 19, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 19, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 19, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jan 18, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jan 18, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 18, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 18, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 18, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 18, 2017	2 Day

Description

Organic Nitrogen (as N)

- Method: APHA 4500 Organic Nitrogen (N)

Total Kjeldahl Nitrogen (as N)

- Method: APHA 4500 TKN

Testing Site

Melbourne

Melbourne

Extracted

Jan 18, 2017

Jan 18, 2017

Holding Time

7 Day

7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jan 17, 2017 2:13 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 530725	Due: Jan 24, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Ion	Ion (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	Eurofins mgt Suite B1				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X											X	X	X														X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												X	X		X			
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
22	SWL4-1	Jan 17, 2017		Water	M17-Ja08051	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
23	SWL4-2	Jan 17, 2017		Water	M17-Ja08052	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
24	SWL4-3	Jan 17, 2017		Water	M17-Ja08053	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts						22	22	24	22	24	22	24	22	22	24	22	22	24	12	22	24	22	24	22	24	22	24	22	24	22	22	22	22	22	24	22	12	22	12	22	24	22	22	22	22	22	1	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	80			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	90			70-130	Pass	
Toluene	%	82			70-130	Pass	
Ethylbenzene	%	81			70-130	Pass	
m&p-Xylenes	%	82			70-130	Pass	
Xylenes - Total	%	84			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	83			70-130	Pass	
TRH C6-C10	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	82			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	110			70-130	Pass	
Ammonia (as N)	%	87			70-130	Pass	
Chloride	%	107			70-130	Pass	
Nitrate & Nitrite (as N)	%	87			70-130	Pass	
Nitrate (as N)	%	87			70-130	Pass	
Nitrite (as N)	%	104			70-130	Pass	
Phosphate total (as P)	%	116			70-130	Pass	
Phosphorus reactive (as P)	%	113			70-130	Pass	
Sulphate (as SO ₄)	%	111			70-130	Pass	
Total Dissolved Solids	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	121			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Carbonate Alkalinity (as CaCO ₃)	%	78			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	82			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	90			70-130	Pass		
Arsenic	%	96			70-130	Pass		
Cadmium	%	103			70-130	Pass		
Chromium	%	95			70-130	Pass		
Copper	%	95			70-130	Pass		
Iron	%	95			70-130	Pass		
Lead	%	110			70-130	Pass		
Manganese	%	86			70-130	Pass		
Mercury	%	117			70-130	Pass		
Nickel	%	96			70-130	Pass		
Selenium	%	84			70-130	Pass		
Zinc	%	95			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	112			70-130	Pass		
Magnesium	%	125			70-130	Pass		
Potassium	%	103			70-130	Pass		
Sodium	%	112			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M17-Ja08030	CP	%	108		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M17-Ja06871	NCP	%	119		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M17-Ja08031	CP	%	87		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	M17-Ja08031	CP	%	124		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Ja08031	CP	%	92		70-130	Pass	
Arsenic	M17-Ja08031	CP	%	98		70-130	Pass	
Cadmium	M17-Ja08031	CP	%	105		70-130	Pass	
Chromium	M17-Ja08031	CP	%	98		70-130	Pass	
Copper	M17-Ja08031	CP	%	95		70-130	Pass	
Iron	M17-Ja08031	CP	%	98		70-130	Pass	
Lead	M17-Ja08031	CP	%	106		70-130	Pass	
Manganese	M17-Ja08031	CP	%	92		70-130	Pass	
Mercury	M17-Ja08031	CP	%	114		70-130	Pass	
Nickel	M17-Ja08031	CP	%	96		70-130	Pass	
Selenium	M17-Ja08031	CP	%	93		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M17-Ja08031	CP	%	96		70-130	Pass	
Magnesium	M17-Ja08031	CP	%	117		70-130	Pass	
Potassium	M17-Ja08031	CP	%	118		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	B17-Ja07654	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	B17-Ja07654	NCP	%	102			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja08038	CP	%	87			70-130	Pass	
Nitrite (as N)	M17-Ja08038	CP	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja08038	CP	%	84			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja08039	CP	%	100			70-130	Pass	
Nitrite (as N)	M17-Ja08039	CP	%	118			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja08042	CP	%	88			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja08043	CP	%	73			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ja08044	CP	%	92			70-130	Pass	
Sulphate (as SO4)	M17-Ja08044	CP	%	82			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ja08045	CP	%	92			70-130	Pass	
Sulphate (as SO4)	M17-Ja08045	CP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M17-Ja08049	CP	%	129			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja08049	CP	%	117			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja08051	CP	%	94			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja08051	CP	%	125			70-130	Pass	
Nitrate (as N)	M17-Ja08051	CP	%	125			70-130	Pass	
Nitrite (as N)	M17-Ja08051	CP	%	117			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja08052	CP	%	78			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M17-Ja08030	CP	mg/L	18	15	18	30%	Pass	
Conductivity (at 25°C)	M17-Ja08030	CP	uS/cm	550	550	<1	30%	Pass	
Phosphorus reactive (as P)	M17-Ja08030	CP	mg/L	0.07	0.08	15	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-Ja08030	CP	mg/L	150	140	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-Ja08030	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-Ja08030	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-Ja08030	CP	mg/L	150	140	3.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M17-Ja08030	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M17-Ja08030	CP	mg/L	0.001	0.001	11	30%	Pass
Copper	M17-Ja08030	CP	mg/L	0.002	0.001	4.0	30%	Pass
Lead	M17-Ja08030	CP	mg/L	< 0.001	0.001	6.0	30%	Pass
Nickel	M17-Ja08030	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Ja08030	CP	mg/L	0.009	0.009	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja08030	CP	mg/L	60	54	11	30%	Pass
Magnesium	M17-Ja08030	CP	mg/L	6.6	6.5	2.0	30%	Pass
Potassium	M17-Ja08030	CP	mg/L	22	23	5.0	30%	Pass
Sodium	M17-Ja08030	CP	mg/L	35	29	20	30%	Pass
Duplicate								
Phosphorus reactive (as P)				Result 1	Result 2	RPD		
M17-Ja08031	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate								
Conductivity (at 25°C)				Result 1	Result 2	RPD		
M17-Ja08036	CP	uS/cm	130	120	<1	30%	Pass	
pH				Result 1	Result 2	RPD		
M17-Ja08036	CP	pH Units	5.1	5.1	pass	30%	Pass	
Phosphate total (as P)				Result 1	Result 2	RPD		
M17-Ja08036	CP	mg/L	0.06	0.06	12	30%	Pass	
Total Kjeldahl Nitrogen (as N)				Result 1	Result 2	RPD		
M17-Ja08036	CP	mg/L	1.0	1.0	1.0	30%	Pass	
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
M17-Ja08036	CP	mg/L	< 20	< 20	<1	30%	Pass	
M17-Ja08036	CP	mg/L	< 10	< 10	<1	30%	Pass	
M17-Ja08036	CP	mg/L	< 10	< 10	<1	30%	Pass	
M17-Ja08036	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
M17-Ja07704	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
M17-Ja07704	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
M17-Ja07704	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
M17-Ja07704	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
M17-Ja07704	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
M17-Ja07704	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate								
Ammonia (as N)				Result 1	Result 2	RPD		
M17-Ja08038	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrite (as N)				Result 1	Result 2	RPD		
M17-Ja08038	CP	mg/L	0.18	0.17	3.0	30%	Pass	
Duplicate								
Ammonia (as N)				Result 1	Result 2	RPD		
M17-Ja08039	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Conductivity (at 25°C)				Result 1	Result 2	RPD		
M17-Ja08039	CP	uS/cm	540	550	<1	30%	Pass	
Nitrite (as N)				Result 1	Result 2	RPD		
M17-Ja08039	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH				Result 1	Result 2	RPD		
M17-Ja08039	CP	pH Units	7.2	7.2	pass	30%	Pass	
Total Dissolved Solids				Result 1	Result 2	RPD		
M17-Ja08039	CP	mg/L	380	380	<1	30%	Pass	
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
M17-Ja08039	CP	mg/L	140	140	2.0	30%	Pass	
M17-Ja08039	CP	mg/L	< 10	< 10	<1	30%	Pass	
M17-Ja08039	CP	mg/L	< 10	< 10	<1	30%	Pass	
M17-Ja08039	CP	mg/L	140	140	2.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja08042	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M17-Ja08042	CP	uS/cm	390	480	20	30%	Pass
Phosphorus reactive (as P)	M17-Ja08042	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja08042	CP	mg/L	50	57	13	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja08042	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja08042	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja08042	CP	mg/L	50	57	13	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M17-Ja08044	CP	mg/L	99	120	15	30%	Pass
Sulphate (as SO ₄)	M17-Ja08044	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M17-Ja08045	CP	mg/L	64	68	5.9	30%	Pass
Sulphate (as SO ₄)	M17-Ja08045	CP	mg/L	39	40	2.5	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M17-Ja08045	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M17-Ja08045	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M17-Ja08045	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead	M17-Ja08045	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Nickel	M17-Ja08045	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Ja08045	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja08045	CP	mg/L	15	15	3.0	30%	Pass
Magnesium	M17-Ja08045	CP	mg/L	12	13	5.0	30%	Pass
Potassium	M17-Ja08045	CP	mg/L	3.9	4.1	7.0	30%	Pass
Sodium	M17-Ja08045	CP	mg/L	50	53	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	M17-Ja08046	CP	NTU	1.1	1.1	6.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Ja08048	CP	uS/cm	420	430	1.0	30%	Pass
pH	M17-Ja08048	CP	pH Units	8.0	7.9	pass	30%	Pass
Phosphate total (as P)	M17-Ja08048	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Ja08048	CP	mg/L	0.5	0.5	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja08048	CP	mg/L	86	82	5.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja08048	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja08048	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja08048	CP	mg/L	86	82	5.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja08050	CP	mg/L	0.01	0.01	16	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja08050	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ja08050	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M17-Ja08050	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja08051	CP	mg/L	0.04	0.04	12	30%	Pass
Conductivity (at 25°C)	M17-Ja08051	CP	uS/cm	670	680	1.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja08051	CP	mg/L	0.32	0.32	<1	30%	Pass
Nitrate (as N)	M17-Ja08051	CP	mg/L	0.32	0.32	<1	30%	Pass
Nitrite (as N)	M17-Ja08051	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Total Dissolved Solids	M17-Ja08051	CP	mg/L	390	380	4.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja08051	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja08051	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja08051	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja08051	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja08052	CP	mg/L	< 10	< 10	<1	30%	Pass
Conductivity (at 25°C)	M17-Ja08052	CP	uS/cm	670	670	1.0	30%	Pass
Phosphorus reactive (as P)	M17-Ja08052	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja08052	CP	mg/L	23	22	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja08052	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja08052	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja08052	CP	mg/L	23	22	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 18, 2017 2:44 PM**
Eurofins | mgt reference: **530890**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **530890-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jan 18, 2017

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix						
Eurofins mgt Sample No.			M17-Ja09369	M17-Ja09370	M17-Ja09371	M17-Ja09372
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	18	42	30	55
Ammonia (as N)	0.01	mg/L	0.02	0.05	< 0.01	0.11
Chloride	1	mg/L	370	2100	12000	1100
Conductivity (at 25°C)	1	uS/cm	1400	6700	36000	3700
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	31	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	31	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.10	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.5	< 0.2	9.6	0.4
pH	0.1	pH Units	6.9	5.1	6.8	5.6
Phosphate total (as P)	0.05	mg/L	0.45	0.13	0.43	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.27	< 0.05
Sulphate (as SO ₄)	5	mg/L	29	200	1200	120
Total Dissolved Solids	10	mg/L	890	3700	20000	2100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	^{G01} < 0.5	< 0.2	9.6	0.5
Total Nitrogen (as N)	0.2	mg/L	< 0.5	< 0.2	41	0.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	< 20	170	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	< 20	170	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.59	0.48	0.16	0.40
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.07	< 0.05
Arsenic	0.001	mg/L	0.005	0.004	0.006	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.0012	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	0.00020	0.0011	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.001	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.016	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.014	< 0.001
Iron	0.05	mg/L	14	11	0.55	5.6
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.39	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.012	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			M17-Ja09369	M17-Ja09370	M17-Ja09371	M17-Ja09372
Eurofins mgt Sample No.			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.044	0.043	0.14	0.010
Manganese (filtered)	0.005	mg/L	0.034	0.040	0.12	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.026	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.004	0.024	0.002
Selenium	0.001	mg/L	0.002	0.002	0.010	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.010	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.34	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.056	0.28	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	67	60	160	18
Magnesium	0.5	mg/L	25	27	710	88
Potassium	0.5	mg/L	8.1	12	130	15
Sodium	0.5	mg/L	140	270	5900	770

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			M17-Ja09373	M17-Ja09374	M17-Ja09375	M17-Ja09376
Eurofins mgt Sample No.			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	53	37	40	< 10
Ammonia (as N)	0.01	mg/L	0.16	0.05	0.05	0.10
Chloride	1	mg/L	2800	1500	810	510
Conductivity (at 25°C)	1	uS/cm	8400	5200	2900	2100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
pH	0.1	pH Units	6.0	5.1	5.6	7.8
Phosphate total (as P)	0.05	mg/L	0.12	0.08	< 0.05	0.16
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.07
Sulphate (as SO ₄)	5	mg/L	170	250	120	34
Total Dissolved Solids	10	mg/L	4900	3000	1700	1300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	< 0.2	< 0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	34	< 20	< 20	230
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	34	< 20	< 20	230
Heavy Metals						
Aluminium	0.05	mg/L	1.6	0.12	0.89	3.3
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	0.001	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00009	0.00009	< 0.00005

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			M17-Ja09373	M17-Ja09374	M17-Ja09375	M17-Ja09376
Eurofins mgt Sample No.			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	0.00008	0.00010	0.00007	< 0.00005
Chromium	0.001	mg/L	0.006	< 0.001	0.001	0.009
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	2.5	2.5	1.8	2.8
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.011	0.17	0.007	0.006
Lead (filtered)	0.001	mg/L	< 0.001	0.21	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	0.012	0.030	0.011
Manganese (filtered)	0.005	mg/L	0.015	0.011	0.028	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.005	0.007	0.005
Nickel (filtered)	0.001	mg/L	0.001	0.004	0.010	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	0.005
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.030	0.008	0.016
Zinc (filtered)	0.005	mg/L	< 0.005	0.024	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	28	27	20	48
Magnesium	0.5	mg/L	180	150	63	39
Potassium	0.5	mg/L	40	18	14	7.3
Sodium	0.5	mg/L	1600	900	550	430

Client Sample ID			MW46 Water	QC279 Water	QC280 Water	MO1SWL20-1 Water
Sample Matrix			M17-Ja09377	M17-Ja09378	M17-Ja09379	M17-Ja09380
Eurofins mgt Sample No.			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	19	-	-	< 10
Ammonia (as N)	0.01	mg/L	0.37	-	-	1.3
Chloride	1	mg/L	610	-	-	2000
Conductivity (at 25°C)	1	uS/cm	2500	-	-	7000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	-	-	0.03
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	-	-	1.2
pH	0.1	pH Units	7.2	-	-	7.4
Phosphate total (as P)	0.05	mg/L	0.06	-	-	0.13
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-	< 0.05
Sulphate (as SO4)	5	mg/L	9.8	-	-	160
Total Dissolved Solids	10	mg/L	1600	-	-	4100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	-	-	2.5
Total Nitrogen (as N)	0.2	mg/L	0.8	-	-	2.5
Turbidity	1	NTU	-	-	-	14

Client Sample ID			MW46	QC279	QC280	MO1 SWL20-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09377	M17-Ja09378	M17-Ja09379	M17-Ja09380
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	240	-	-	63
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	240	-	-	63
Heavy Metals						
Aluminium	0.05	mg/L	0.84	-	-	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	-	-	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.2	-	-	2.2
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	1.5
Lead	0.001	mg/L	< 0.001	-	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	-	-	0.027
Manganese (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	0.021
Mercury	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.031	-	-	< 0.005
Zinc (filtered)	0.005	mg/L	0.012	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	84	-	-	23
Magnesium	0.5	mg/L	63	-	-	130
Potassium	0.5	mg/L	10	-	-	28
Sodium	0.5	mg/L	660	-	-	1500
Pathogens						
E.coli	1	MPN/100mL	-	-	-	41
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	620

Client Sample ID			M01 SWL20-2	M01 SWL20-3	M01 SWL19-1	M01 SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09381	M17-Ja09382	M17-Ja09383	M17-Ja09384
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	1.3	1.3	< 0.01	< 0.01
Chloride	1	mg/L	2200	2300	1400	1300
Conductivity (at 25°C)	1	uS/cm	6800	6900	4600	4500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.5	0.5	< 0.2	< 0.2
pH	0.1	pH Units	7.4	7.4	5.7	5.7
Phosphate total (as P)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	160	160	150	150
Total Dissolved Solids	10	mg/L	4000	4200	2700	2700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.8	1.8	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	2.8	1.8	< 0.2	< 0.2
Turbidity	1	NTU	9.8	9.2	6.7	1.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	68	65	66	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	68	65	66	< 20
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.2	2.3	0.05	0.06
Iron (filtered)	0.05	mg/L	1.5	1.5	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.027	0.028	0.042	0.041
Manganese (filtered)	0.005	mg/L	0.024	0.022	0.040	0.041
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.002	0.002
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			M01 SWL20-2	M01 SWL20-3	M01 SWL19-1	M01 SWL19-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09381	M17-Ja09382	M17-Ja09383	M17-Ja09384
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	24	24	16	16
Magnesium	0.5	mg/L	140	140	100	98
Potassium	0.5	mg/L	29	28	16	15
Sodium	0.5	mg/L	1400	1300	820	780
Pathogens						
E.coli	1	MPN/100mL	180	260	5	<1
Thermotolerant Coliforms	1	MPN/100mL	1400	3000	42	820

Client Sample ID			M01 SWL19-3	M01 SWL18-1	M01 SWL18-2	M01 SWL18-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09385	M17-Ja09386	M17-Ja09387	M17-Ja09388
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	0.03	0.03
Chloride	1	mg/L	1300	2200	2300	2300
Conductivity (at 25°C)	1	uS/cm	4500	7400	7100	7300
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.9	1.9	2.0
pH	0.1	pH Units	5.7	7.9	8.0	7.9
Phosphate total (as P)	0.05	mg/L	< 0.05	0.90	0.85	0.86
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.38	0.38	0.38
Sulphate (as SO ₄)	5	mg/L	150	79	71	67
Total Dissolved Solids	10	mg/L	2700	4400	4500	4300
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.9	1.9	2.0
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.9	1.9	2.0
Turbidity	1	NTU	42	10	12	12
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	220	220	220
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	220	220	220
Heavy Metals						
Aluminium	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	0.002	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.08	0.95	0.78	0.74
Iron (filtered)	0.05	mg/L	< 0.05	0.13	0.15	0.15

Client Sample ID			M01 SWL19-3	M01 SWL18-1	M01 SWL18-2	M01 SWL18-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09385	M17-Ja09386	M17-Ja09387	M17-Ja09388
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.047	0.10	0.089	0.086
Manganese (filtered)	0.005	mg/L	0.046	0.010	0.007	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.017	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	18	77	78	76
Magnesium	0.5	mg/L	100	190	180	180
Potassium	0.5	mg/L	15	32	31	32
Sodium	0.5	mg/L	780	1300	1300	1200
Pathogens						
E.coli	1	MPN/100mL	1	30	M15<10	10
Thermotolerant Coliforms	1	MPN/100mL	110	1900	2700	3100

Client Sample ID			M01 QC289	M01 QC284	M01 QC281
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09389	M17-Ja09390	M17-Ja09391
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	11
Ammonia (as N)	0.01	mg/L	1.3	0.02	< 0.01
Chloride	1	mg/L	2100	2300	1300
Conductivity (at 25°C)	1	uS/cm	6900	7200	4500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.8	1.9	< 0.2
pH	0.1	pH Units	7.4	8.0	5.8
Phosphate total (as P)	0.05	mg/L	0.09	0.92	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.38	< 0.05
Sulphate (as SO ₄)	5	mg/L	150	64	150
Total Dissolved Solids	10	mg/L	4100	4400	2700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.1	1.9	< 0.2
Total Nitrogen (as N)	0.2	mg/L	3.1	1.9	< 0.2
Turbidity	1	NTU	8.4	10	10
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	65	220	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	65	220	< 20

Client Sample ID			M01 QC289	M01 QC284	M01 QC281
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ja09389	M17-Ja09390	M17-Ja09391
Date Sampled			Jan 18, 2017	Jan 18, 2017	Jan 18, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.2	0.73	0.06
Iron (filtered)	0.05	mg/L	1.5	0.12	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.027	0.090	0.041
Manganese (filtered)	0.005	mg/L	0.025	0.006	0.040
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.001	0.002
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	24	72	15
Magnesium	0.5	mg/L	140	170	100
Potassium	0.5	mg/L	27	30	15
Sodium	0.5	mg/L	1200	1200	830
Pathogens					
E.coli	1	MPN/100mL	52	M15<10	1
Thermotolerant Coliforms	1	MPN/100mL	1300	7300	220

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 19, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 19, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 19, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 19, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 19, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 19, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 19, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 19, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jan 19, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 19, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 20, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 20, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 20, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 20, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jan 20, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jan 20, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 19, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 19, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 19, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 19, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jan 19, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jan 19, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jan 18, 2017 2:44 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 530890	Due: Jan 25, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermolabile Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X			X	X	X	X	X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						X	X			X	
Brisbane Laboratory - NATA Site # 20794																																														
Perth Laboratory - NATA Site # 18217																																														
External Laboratory																																														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																									
1	MW54	Jan 18, 2017		Water	M17-Ja09369	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW53	Jan 18, 2017		Water	M17-Ja09370	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW52	Jan 18, 2017		Water	M17-Ja09371	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW51	Jan 18, 2017		Water	M17-Ja09372	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW50	Jan 18, 2017		Water	M17-Ja09373	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW49	Jan 18, 2017		Water	M17-Ja09374	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW48	Jan 18, 2017		Water	M17-Ja09375	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW47	Jan 18, 2017		Water	M17-Ja09376	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW46	Jan 18, 2017		Water	M17-Ja09377	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Jan 18, 2017 2:44 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	530890	Due:	Jan 25, 2017
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X									X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X		X	
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
10	QC279	Jan 18, 2017		Water	M17-Ja09378			X	X	X	X				X		X						X	X	X	X	X																
11	QC280	Jan 18, 2017		Water	M17-Ja09379			X	X	X	X				X		X						X	X	X	X	X																
12	SWL20-1	Jan 18, 2017		Water	M17-Ja09380	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	SWL20-2	Jan 18, 2017		Water	M17-Ja09381	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	SWL20-3	Jan 18, 2017		Water	M17-Ja09382	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL19-1	Jan 18, 2017		Water	M17-Ja09383	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL19-2	Jan 18, 2017		Water	M17-Ja09384	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL19-3	Jan 18, 2017		Water	M17-Ja09385	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL18-1	Jan 18, 2017		Water	M17-Ja09386	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	SWL18-2	Jan 18, 2017		Water	M17-Ja09387	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	SWL18-1	Jan 18, 2017		Water	M17-Ja09388	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	QC289	Jan 18, 2017		Water	M17-Ja09389	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)					
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X									X	X	X														X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X									X	X		X	
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
22	QC284	Jan 18, 2017		Water	M17-Ja09390	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
23	QC281	Jan 18, 2017		Water	M17-Ja09391	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Test Counts						21	21	23	21	23	21	23	21	21	23	21	21	23	12	21	23	21	23	21	23	21	23	21	23	21	23	21	21	21	21	21	23	21	12	21	12	21	23	21	21			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	-1.1296			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	114			70-130	Pass		
Ammonia (as N)	%	93			70-130	Pass		
Chloride	%	95			70-130	Pass		
Nitrate & Nitrite (as N)	%	91			70-130	Pass		
Nitrate (as N)	%	91			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Phosphate total (as P)	%	113			70-130	Pass		
Phosphorus reactive (as P)	%	110			70-130	Pass		
Sulphate (as SO ₄)	%	113			70-130	Pass		
Total Dissolved Solids	%	96			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	92			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	96			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	101			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Arsenic	%	99			70-130	Pass		
Cadmium	%	99			70-130	Pass		
Chromium	%	97			70-130	Pass		
Copper	%	96			70-130	Pass		
Iron	%	90			70-130	Pass		
Lead	%	100			70-130	Pass		
Manganese	%	99			70-130	Pass		
Mercury	%	95			70-130	Pass		
Nickel	%	96			70-130	Pass		
Selenium	%	94			70-130	Pass		
Zinc	%	99			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	113			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	103			70-130	Pass		
Sodium	%	78			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M17-Ja08044	NCP	%	92		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja09350	NCP	%	77		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M17-Ja09403	NCP	%	94		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja09403	NCP	%	117		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M17-Ja09370	CP	%	100		70-130	Pass	
Cadmium	M17-Ja09370	CP	%	105		70-130	Pass	
Chromium	M17-Ja09370	CP	%	99		70-130	Pass	
Copper	M17-Ja09370	CP	%	88		70-130	Pass	
Lead	M17-Ja09370	CP	%	121		70-130	Pass	
Manganese	M17-Ja09370	CP	%	97		70-130	Pass	
Mercury	M17-Ja09370	CP	%	99		70-130	Pass	
Nickel	M17-Ja09370	CP	%	92		70-130	Pass	
Selenium	M17-Ja09370	CP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja09376	CP	%	88			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja09376	CP	%	89			70-130	Pass	
Nitrate (as N)	M17-Ja09376	CP	%	89			70-130	Pass	
Nitrite (as N)	M17-Ja09376	CP	%	101			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja09377	CP	%	88			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja09377	CP	%	90			70-130	Pass	
Nitrate (as N)	M17-Ja09377	CP	%	89			70-130	Pass	
Nitrite (as N)	M17-Ja09377	CP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M17-Ja09382	CP	%	101			70-130	Pass	
Cadmium	M17-Ja09382	CP	%	105			70-130	Pass	
Chromium	M17-Ja09382	CP	%	94			70-130	Pass	
Copper	M17-Ja09382	CP	%	88			70-130	Pass	
Iron	M17-Ja09382	CP	%	85			70-130	Pass	
Lead	M17-Ja09382	CP	%	106			70-130	Pass	
Manganese	M17-Ja09382	CP	%	92			70-130	Pass	
Mercury	M17-Ja09382	CP	%	105			70-130	Pass	
Nickel	M17-Ja09382	CP	%	89			70-130	Pass	
Selenium	M17-Ja09382	CP	%	95			70-130	Pass	
Zinc	M17-Ja09382	CP	%	85			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ja09382	CP	%	110			70-130	Pass	
Potassium	M17-Ja09382	CP	%	110			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja09388	CP	%	88			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja09388	CP	%	90			70-130	Pass	
Nitrate (as N)	M17-Ja09388	CP	%	90			70-130	Pass	
Nitrite (as N)	M17-Ja09388	CP	%	101			70-130	Pass	
Phosphate total (as P)	M17-Ja09388	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja09389	CP	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja09389	CP	%	88			70-130	Pass	
Nitrate (as N)	M17-Ja09389	CP	%	87			70-130	Pass	
Nitrite (as N)	M17-Ja09389	CP	%	100			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja09391	CP	%	88			70-130	Pass	
Sulphate (as SO4)	M17-Ja09391	CP	%	86			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ja09369	CP	mg/L	0.59	0.72	19	30%	Pass	
Chromium	M17-Ja09369	CP	mg/L	0.002	0.002	4.0	30%	Pass	
Copper	M17-Ja09369	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ja09369	CP	mg/L	0.044	0.039	12	30%	Pass	
Selenium	M17-Ja09369	CP	mg/L	0.002	0.002	16	30%	Pass	
Zinc	S17-Ja11278	NCP	mg/L	< 0.005	0.005	20	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M17-Ja09370	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ja09376	CP	mg/L	0.10	0.09	9.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja09376	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ja09376	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Ja09376	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	M17-Ja09376	CP	mg/L	0.16	0.18	15	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja09376	CP	mg/L	< 0.2	0.3	61	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ja09377	CP	mg/L	0.37	0.36	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja09377	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ja09377	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Ja09377	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Turbidity	M17-Ja09380	CP	NTU	14	15	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ja09381	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Dissolved Solids	M17-Ja09381	CP	mg/L	4000	4200	3.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ja09381	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	M17-Ja09381	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Ja09381	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Ja09381	CP	mg/L	0.001	< 0.001	14	30%	Pass	
Copper	M17-Ja09381	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Ja09381	CP	mg/L	2.2	2.1	4.0	30%	Pass	
Lead	M17-Ja09381	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ja09381	CP	mg/L	0.027	0.026	6.0	30%	Pass	
Mercury	M17-Ja09381	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Ja09381	CP	mg/L	0.003	0.003	7.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Ja09381	CP	mg/L	24	22	6.0	30%	Pass	
Magnesium	M17-Ja09381	CP	mg/L	140	130	8.0	30%	Pass	
Potassium	M17-Ja09381	CP	mg/L	29	27	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M17-Ja09385	CP	uS/cm	4500	4500	<1	30%	Pass	
pH	M17-Ja09385	CP	pH Units	5.7	5.7	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja09385	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ja09385	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja09385	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja09385	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ja09388	CP	mg/L	0.03	0.03	12	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja09388	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ja09388	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Ja09388	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja09389	CP	mg/L	1.3	1.3	2.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja09389	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ja09389	CP	mg/L	0.03	0.03	12	30%	Pass
Nitrite (as N)	M17-Ja09389	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phosphate total (as P)	M17-Ja09389	CP	mg/L	0.09	0.08	12	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Ja09389	CP	mg/L	3.1	2.4	25	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	M17-Ja09391	CP	mg/L	1300	1300	3.1	30%	Pass
Phosphorus reactive (as P)	M17-Ja09391	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as SO ₄)	M17-Ja09391	CP	mg/L	150	160	6.3	30%	Pass
Total Dissolved Solids	M17-Ja09391	CP	mg/L	2700	2800	4.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
M01	Microbiological Testing performed outside the recommended holding time
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 19, 2017 2:29 PM**
Eurofins | mgt reference: **531096**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **531096-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jan 19, 2017

Client Sample ID			MW45 Water	MW44 Water	MW43 Water	MW42 Water
Sample Matrix			M17-Ja10740	M17-Ja10741	M17-Ja10742	M17-Ja10743
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	10	90	37
Ammonia (as N)	0.01	mg/L	0.42	0.32	0.98	0.29
Chloride	1	mg/L	450	350	1200	50
Conductivity (at 25°C)	1	uS/cm	1800	1400	4000	220
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.9	1.3	5.2	0.8
pH	0.1	pH Units	7.7	7.2	6.3	4.2
Phosphate total (as P)	0.05	mg/L	0.50	0.23	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.06	0.13	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	21	20	42	6.3
Total Dissolved Solids	10	mg/L	1000	1000	^{Q19} 3400	^{Q19} 190
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	1.6	6.2	1.1
Total Nitrogen (as N)	0.2	mg/L	1.3	1.6	6.2	1.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	240	210	160	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	240	210	160	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.68	9.1	3.4	0.32
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	1.4	0.24
Arsenic	0.001	mg/L	0.002	0.008	0.006	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.005	0.004	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.023	0.014	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.006	0.012	< 0.001
Copper	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.8	3.6	0.58	0.12
Iron (filtered)	0.05	mg/L	< 0.05	0.36	0.06	0.09
Lead	0.001	mg/L	0.001	0.019	0.006	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001

Client Sample ID			MW45 Water	MW44 Water	MW43 Water	MW42 Water
Sample Matrix			M17-Ja10740	M17-Ja10741	M17-Ja10742	M17-Ja10743
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.006	0.007	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.005	0.004	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	0.010	0.008	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.005	0.008	< 0.001
Zinc	0.005	mg/L	< 0.005	0.046	0.007	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	74	20	68	0.9
Magnesium	0.5	mg/L	43	34	120	4.7
Potassium	0.5	mg/L	4.8	3.6	7.9	0.6
Sodium	0.5	mg/L	250	270	610	30

Client Sample ID			MW41 Water	MW40 Water	MW39 Water	MW38 Water
Sample Matrix			M17-Ja10744	M17-Ja10745	M17-Ja10746	M17-Ja10747
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	130	34	21	29
Ammonia (as N)	0.01	mg/L	0.38	0.32	0.86	0.65
Chloride	1	mg/L	130	85	69	130
Conductivity (at 25°C)	1	uS/cm	510	340	370	540
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	5.7	1.0	0.8	1.6
pH	0.1	pH Units	3.6	4.7	6.8	6.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.84	0.87
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.83	0.77
Sulphate (as SO ₄)	5	mg/L	31	11	9.9	14
Total Dissolved Solids	10	mg/L	^{Q19} 690	^{Q19} 280	230	370
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.1	1.3	1.7	2.3
Total Nitrogen (as N)	0.2	mg/L	6.1	1.3	1.7	2.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	56	57
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	56	57
Heavy Metals						
Aluminium	0.05	mg/L	1.9	1.2	< 0.05	0.51
Aluminium (filtered)	0.05	mg/L	2.0	1.1	0.05	0.27
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	0.00013	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW41 Water	MW40 Water	MW39 Water	MW38 Water
Sample Matrix			M17-Ja10744	M17-Ja10745	M17-Ja10746	M17-Ja10747
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	0.00013	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.64	0.29	0.44	0.44
Iron (filtered)	0.05	mg/L	0.60	0.25	0.24	0.23
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	< 0.005	< 0.005	0.070
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.047
Alkali Metals						
Calcium	0.5	mg/L	3.9	2.0	15	20
Magnesium	0.5	mg/L	7.9	7.7	6.9	12
Potassium	0.5	mg/L	1.0	1.3	12	16
Sodium	0.5	mg/L	73	49	42	61

Client Sample ID			MW37 Water	MW36 Water	MW34 Water	QC288 Water
Sample Matrix			M17-Ja10748	M17-Ja10749	M17-Ja10750	M17-Ja10751
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	29	< 10	40	< 10
Ammonia (as N)	0.01	mg/L	1.3	0.04	0.23	0.46
Chloride	1	mg/L	23	15	53	460
Conductivity (at 25°C)	1	uS/cm	130	120	310	1800
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.3	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	2.3	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.04	0.05	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.9	4.1	0.2
pH	0.1	pH Units	5.7	6.2	6.0	7.8
Phosphate total (as P)	0.05	mg/L	0.38	0.12	1.0	0.09
Phosphorus reactive (as P)	0.05	mg/L	0.38	0.09	0.99	0.08
Sulphate (as SO ₄)	5	mg/L	< 5	< 5	< 5	21
Total Dissolved Solids	10	mg/L	^{Q19} 120	^{Q19} 120	^{Q19} 420	^{Q19} 2100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	0.9	4.3	0.7
Total Nitrogen (as N)	0.2	mg/L	1.3	3.2	4.3	0.7

Client Sample ID			MW37 Water	MW36 Water	MW34 Water	QC288 Water
Sample Matrix			M17-Ja10748	M17-Ja10749	M17-Ja10750	M17-Ja10751
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	65	240
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	65	240
Heavy Metals						
Aluminium	0.05	mg/L	0.15	< 0.05	0.70	0.40
Aluminium (filtered)	0.05	mg/L	0.12	< 0.05	0.45	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.003	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	< 0.05	2.1	0.50
Iron (filtered)	0.05	mg/L	0.05	< 0.05	1.8	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.1	12	13	68
Magnesium	0.5	mg/L	2.1	1.8	12	41
Potassium	0.5	mg/L	0.9	< 0.5	14	4.5
Sodium	0.5	mg/L	11	9.6	37	240

Client Sample ID			QC291 Water	QC292 Water	SWL22-1 Water	SWL22-2 Water
Sample Matrix			M17-Ja10752	M17-Ja10753	M17-Ja10754	M17-Ja10755
Eurofins mgt Sample No.			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	-	-	< 10	< 10
Ammonia (as N)	0.01	mg/L	-	-	0.03	0.02
Chloride	1	mg/L	-	-	2200	2200
Conductivity (at 25°C)	1	uS/cm	-	-	7100	7000
Nitrate & Nitrite (as N)	0.05	mg/L	-	-	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	-	-	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	-	-	< 0.02	< 0.02

Client Sample ID			QC291	QC292	SWL22-1	SWL22-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja10752	M17-Ja10753	M17-Ja10754	M17-Ja10755
Date Sampled			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	-	-	5.7	3.0
pH	0.1	pH Units	-	-	8.1	8.1
Phosphate total (as P)	0.05	mg/L	-	-	2.5	1.4
Phosphorus reactive (as P)	0.05	mg/L	-	-	1.1	1.0
Sulphate (as SO4)	5	mg/L	-	-	50	49
Total Dissolved Solids	10	mg/L	-	-	4200	4400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	-	5.7	3.0
Total Nitrogen (as N)	0.2	mg/L	-	-	5.7	3.0
Turbidity	1	NTU	-	-	11	14
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	-	260	250
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	-	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	-	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	-	-	260	250
Heavy Metals						
Aluminium	0.05	mg/L	-	-	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	-	0.002	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Cadmium	0.00005	mg/L	-	-	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	-	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	-	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	-	-	1.6	1.2
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.21	0.20
Lead	0.001	mg/L	-	-	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	-	0.16	0.16
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.069	0.064
Mercury	0.0001	mg/L	-	-	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	-	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Selenium	0.001	mg/L	-	-	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	-	0.007	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	-	-	69	69
Magnesium	0.5	mg/L	-	-	170	180
Potassium	0.5	mg/L	-	-	34	34
Sodium	0.5	mg/L	-	-	1100	1200
Pathogens						
E.coli	1	MPN/100mL	-	-	M15<10	20
Thermotolerant Coliforms	1	MPN/100mL	-	-	4900	11000

Client Sample ID			SWL22-3	SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja10756	M17-Ja10757	M17-Ja10758	M17-Ja10759
Date Sampled			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	36	37	36
Ammonia (as N)	0.01	mg/L	0.07	0.05	0.05	0.05
Chloride	1	mg/L	1900	64	61	55
Conductivity (at 25°C)	1	uS/cm	6100	290	290	290
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.3	1.8	1.5	1.2
pH	0.1	pH Units	7.9	4.0	4.0	4.0
Phosphate total (as P)	0.05	mg/L	1.3	0.27	0.25	0.10
Phosphorus reactive (as P)	0.05	mg/L	1.3	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	37	13	13	13
Total Dissolved Solids	10	mg/L	4000	^{Q19} 240	^{Q19} 240	^{Q19} 240
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.4	1.9	1.6	1.3
Total Nitrogen (as N)	0.2	mg/L	2.4	1.9	1.6	1.3
Turbidity	1	NTU	8.7	4.4	24	4.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	230	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	230	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.05	0.36	0.37	0.47
Aluminium (filtered)	0.05	mg/L	< 0.05	0.36	0.34	0.33
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.5	0.16	0.16	0.17
Iron (filtered)	0.05	mg/L	0.32	0.13	0.13	0.13
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.18	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.083	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.010	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL22-3	SWL17-1	SWL17-2	SWL17-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja10756	M17-Ja10757	M17-Ja10758	M17-Ja10759
Date Sampled			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	65	1.7	1.6	1.5
Magnesium	0.5	mg/L	160	8.1	8.0	7.8
Potassium	0.5	mg/L	30	0.8	0.8	0.7
Sodium	0.5	mg/L	1000	36	36	35
Pathogens						
E.coli	1	MPN/100mL	10	M15<10	M15<10	M15<10
Thermotolerant Coliforms	1	MPN/100mL	3000	20	10	31

Client Sample ID			SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ja10760	M17-Ja10761	M17-Ja10762
Date Sampled			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	17	< 10	15
Ammonia (as N)	0.01	mg/L	0.05	0.02	0.03
Chloride	1	mg/L	170	54	63
Conductivity (at 25°C)	1	uS/cm	770	350	390
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.02	0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.8	0.8	2.4
pH	0.1	pH Units	6.8	7.3	6.9
Phosphate total (as P)	0.05	mg/L	1.5	0.61	1.2
Phosphorus reactive (as P)	0.05	mg/L	1.3	0.44	0.62
Sulphate (as SO ₄)	5	mg/L	40	15	15
Total Dissolved Solids	10	mg/L	^{Q19} 610	220	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.9	0.8	2.4
Total Nitrogen (as N)	0.2	mg/L	2.9	0.8	2.4
Turbidity	1	NTU	1.9	2.4	4.7
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	64	72	79
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	64	72	79
Heavy Metals					
Aluminium	0.05	mg/L	0.32	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	0.22	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.26	0.21	0.64
Iron (filtered)	0.05	mg/L	0.24	0.11	0.30

Client Sample ID			SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ja10760	M17-Ja10761	M17-Ja10762
Date Sampled			Jan 19, 2017	Jan 19, 2017	Jan 19, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.024
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0002
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	0.0002
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	35	23	28
Magnesium	0.5	mg/L	21	8.2	9.3
Potassium	0.5	mg/L	23	8.0	14
Sodium	0.5	mg/L	89	31	36
Pathogens					
E.coli	1	MPN/100mL	M15 <10	290	1900
Thermotolerant Coliforms	1	MPN/100mL	140	2500	3700

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 20, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 20, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 20, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 20, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 20, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 20, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 20, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 20, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jan 20, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 20, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 23, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 23, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 23, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 23, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jan 20, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jan 20, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 20, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 20, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 20, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 20, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jan 20, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jan 20, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jan 19, 2017 2:29 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 531096	Due: Jan 27, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermolabrant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X						X	X			X		X				
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						X	X			X			
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
External Laboratory																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																										
1	MW45	Jan 19, 2017		Water	M17-Ja10740	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW44	Jan 19, 2017		Water	M17-Ja10741	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW43	Jan 19, 2017		Water	M17-Ja10742	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW42	Jan 19, 2017		Water	M17-Ja10743	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW41	Jan 19, 2017		Water	M17-Ja10744	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW40	Jan 19, 2017		Water	M17-Ja10745	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW39	Jan 19, 2017		Water	M17-Ja10746	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW38	Jan 19, 2017		Water	M17-Ja10747	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW37	Jan 19, 2017		Water	M17-Ja10748	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Jan 19, 2017 2:29 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	531096	Due:	Jan 27, 2017
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Thermotolerant Coliforms	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X									X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X					X	X		X			
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	MW36	Jan 19, 2017		Water	M17-Ja10749	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW34	Jan 19, 2017		Water	M17-Ja10750	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC288	Jan 19, 2017		Water	M17-Ja10751	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	QC291	Jan 19, 2017		Water	M17-Ja10752			X	X	X				X			X			X	X	X	X	X	X	X	X				X							X						
14	QC292	Jan 19, 2017		Water	M17-Ja10753			X	X	X				X			X			X	X	X	X	X	X	X	X				X							X						
15	SWL22-1	Jan 19, 2017		Water	M17-Ja10754	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL22-2	Jan 19, 2017		Water	M17-Ja10755	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL22-3	Jan 19, 2017		Water	M17-Ja10756	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL17-1	Jan 19, 2017		Water	M17-Ja10757	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	SWL17-2	Jan 19, 2017		Water	M17-Ja10758	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	SWL17-3	Jan 19, 2017		Water	M17-Ja10759	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	SWL16-1	Jan 19, 2017		Water	M17-Ja10760	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X						X	X			X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X					X	X			X	
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
22	SWL16-2	Jan 19, 2017		Water	M17-Ja10761	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
23	SWL16-3	Jan 19, 2017		Water	M17-Ja10762	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Test Counts						21	21	23	21	23	21	23	21	21	23	21	21	23	9	21	23	21	23	21	23	21	23	21	23	21	21	21	21	21	23	21	9	21	9	21	23	21	21		

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	-0.0322			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	112			70-130	Pass		
Ammonia (as N)	%	88			70-130	Pass		
Chloride	%	116			70-130	Pass		
Nitrate & Nitrite (as N)	%	90			70-130	Pass		
Nitrate (as N)	%	90			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Phosphate total (as P)	%	125			70-130	Pass		
Phosphorus reactive (as P)	%	125			70-130	Pass		
Sulphate (as SO ₄)	%	119			70-130	Pass		
Total Dissolved Solids	%	96			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	104			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	108			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	81			70-130	Pass		
Arsenic	%	100			70-130	Pass		
Cadmium	%	99			70-130	Pass		
Chromium	%	92			70-130	Pass		
Copper	%	98			70-130	Pass		
Iron	%	98			70-130	Pass		
Lead	%	90			70-130	Pass		
Manganese	%	87			70-130	Pass		
Mercury	%	99			70-130	Pass		
Nickel	%	96			70-130	Pass		
Selenium	%	101			70-130	Pass		
Zinc	%	102			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	104			70-130	Pass		
Magnesium	%	119			70-130	Pass		
Potassium	%	99			70-130	Pass		
Sodium	%	109			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ja10740	CP	%	89		70-130	Pass	
Chloride	B17-Ja09725	NCP	%	95		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja10740	CP	%	90		70-130	Pass	
Nitrate (as N)	M17-Ja10740	CP	%	90		70-130	Pass	
Nitrite (as N)	M17-Ja10740	CP	%	99		70-130	Pass	
Phosphate total (as P)	M17-Ja09582	NCP	%	118		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B17-Ja09723	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Ja12432	NCP	%	65		70-130	Fail	Q08
Spike - % Recovery								
Heavy Metals								
				Result 1				
Arsenic	M17-Ja10741	CP	%	106		70-130	Pass	
Cadmium	M17-Ja10741	CP	%	109		70-130	Pass	
Chromium	M17-Ja10741	CP	%	122		70-130	Pass	
Copper	M17-Ja10741	CP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron	M17-Ja10741	CP	%	84			70-130	Pass	
Lead	M17-Ja10741	CP	%	117			70-130	Pass	
Manganese	M17-Ja10741	CP	%	99			70-130	Pass	
Mercury	M17-Ja10741	CP	%	117			70-130	Pass	
Nickel	M17-Ja10741	CP	%	101			70-130	Pass	
Selenium	M17-Ja10741	CP	%	98			70-130	Pass	
Zinc	M17-Ja10741	CP	%	102			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ja10741	CP	%	101			70-130	Pass	
Magnesium	M17-Ja10741	CP	%	93			70-130	Pass	
Potassium	M17-Ja10741	CP	%	112			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Sodium	M17-Ja13741	NCP	%	120			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja10747	CP	%	85			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja10747	CP	%	90			70-130	Pass	
Nitrate (as N)	M17-Ja10747	CP	%	89			70-130	Pass	
Nitrite (as N)	M17-Ja10747	CP	%	100			70-130	Pass	
Sulphate (as SO4)	M17-Ja10747	CP	%	118			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja10750	CP	%	87			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja10750	CP	%	89			70-130	Pass	
Nitrate (as N)	M17-Ja10750	CP	%	88			70-130	Pass	
Nitrite (as N)	M17-Ja10750	CP	%	99			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja10751	CP	%	92			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja10762	CP	%	92			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja10762	CP	%	92			70-130	Pass	
Nitrate (as N)	M17-Ja10762	CP	%	92			70-130	Pass	
Nitrite (as N)	M17-Ja10762	CP	%	102			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ja10740	CP	mg/L	0.42	0.43	2.0	30%	Pass	
Conductivity (at 25°C)	M17-Ja10740	CP	uS/cm	1800	1800	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja10740	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ja10740	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Ja10740	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M17-Ja10740	CP	pH Units	7.7	7.7	pass	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja10927	NCP	mg/L	16	16	5.2	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-Ja10740	CP	mg/L	240	240	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-Ja10740	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-Ja10740	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-Ja10740	CP	mg/L	240	240	1.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Ja10740	CP	mg/L	0.68	0.60	13	30%	Pass
Chromium	M17-Ja10740	CP	mg/L	0.001	0.001	8.0	30%	Pass
Copper	M17-Ja10740	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-Ja10740	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel	M17-Ja10740	CP	mg/L	0.002	0.001	20	30%	Pass
Selenium	M17-Ja10740	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja10740	CP	mg/L	74	71	3.0	30%	Pass
Magnesium	M17-Ja10740	CP	mg/L	43	42	3.0	30%	Pass
Potassium	M17-Ja10740	CP	mg/L	4.8	4.7	2.0	30%	Pass
Sodium	M17-Ja10740	CP	mg/L	250	240	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Ja10745	CP	uS/cm	340	340	<1	30%	Pass
pH	M17-Ja10745	CP	pH Units	4.7	4.6	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10745	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10745	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10745	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10745	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja10746	CP	mg/L	21	18	17	30%	Pass
Chloride	M17-Ja10746	CP	mg/L	69	69	<1	30%	Pass
Sulphate (as SO ₄)	M17-Ja10746	CP	mg/L	9.9	9.5	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja10747	CP	mg/L	0.65	0.59	9.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja10747	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ja10747	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M17-Ja10747	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Ja10748	CP	uS/cm	130	130	1.0	30%	Pass
pH	M17-Ja10748	CP	pH Units	5.7	5.6	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10748	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10748	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10748	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10748	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M17-Ja10749	CP	mg/L	0.12	0.12	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja10750	CP	mg/L	0.23	0.21	10	30%	Pass
Conductivity (at 25°C)	M17-Ja10750	CP	uS/cm	310	310	<1	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja10750	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ja10750	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M17-Ja10750	CP	mg/L	0.05	0.05	3.0	30%	Pass
pH	M17-Ja10750	CP	pH Units	6.0	6.0	pass	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ja10750	CP	mg/L	0.99	0.99	<1	30%	Pass
Total Dissolved Solids	M17-Ja10750	CP	mg/L	420	410	3.0	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10750	CP	mg/L	65	65	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10750	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10750	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10750	CP	mg/L	65	65	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Ja10750	CP	mg/L	0.70	0.63	10	30%	Pass
Arsenic	M17-Ja10750	CP	mg/L	0.003	0.003	3.0	30%	Pass
Cadmium	M17-Ja10750	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M17-Ja10750	CP	mg/L	0.001	0.001	3.0	30%	Pass
Copper	M17-Ja10750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M17-Ja10750	CP	mg/L	2.1	2.1	1.0	30%	Pass
Lead	M17-Ja10750	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-Ja10750	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Ja10750	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja10750	CP	mg/L	13	13	1.0	30%	Pass
Magnesium	M17-Ja10750	CP	mg/L	12	12	2.0	30%	Pass
Potassium	M17-Ja10750	CP	mg/L	14	14	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Ja10757	CP	mg/L	64	63	1.4	30%	Pass
Conductivity (at 25°C)	M17-Ja10757	CP	uS/cm	290	290	<1	30%	Pass
pH	M17-Ja10757	CP	pH Units	4.0	4.0	pass	30%	Pass
Sulphate (as SO ₄)	M17-Ja10757	CP	mg/L	13	13	4.6	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10757	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10757	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10757	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10757	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja10758	CP	mg/L	37	41	11	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Ja10760	CP	uS/cm	770	770	1.0	30%	Pass
pH	M17-Ja10760	CP	pH Units	6.8	6.7	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10760	CP	mg/L	64	59	7.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10760	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10760	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10760	CP	mg/L	64	59	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Ja10761	CP	NTU	2.4	2.7	10	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ja10762	CP	mg/L	0.03	0.03	8.0	30%	Pass
Conductivity (at 25°C)	M17-Ja10762	CP	uS/cm	390	400	2.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Ja10762	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ja10762	CP	mg/L	0.02	< 0.02	18	30%	Pass
Nitrite (as N)	M17-Ja10762	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
pH	M17-Ja10762	CP	pH Units	6.9	6.9	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja10762	CP	mg/L	79	80	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja10762	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja10762	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja10762	CP	mg/L	79	80	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 20, 2017 2:42 PM**
Eurofins | mgt reference: **531351**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **531351-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAPERT04483AA
Received Date Jan 20, 2017

Client Sample ID			MW27 Water	MW26 Water	MW25 Water	MW24 Water
Sample Matrix						
Eurofins mgt Sample No.			M17-Ja12402	M17-Ja12432	M17-Ja12433	M17-Ja12434
Date Sampled			Jan 20, 2017	Jan 20, 2017	Jan 20, 2017	Jan 20, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	40	81	59	46
Ammonia (as N)	0.01	mg/L	0.32	0.10	< 0.01	0.16
Chloride	1	mg/L	53	140	89	180
Conductivity (at 25°C)	1	uS/cm	190	590	410	700
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.51	7.3	3.4
Nitrate (as N)	0.02	mg/L	< 0.02	0.48	7.3	3.4
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.3	2.0	2.0	1.4
pH	0.1	pH Units	4.2	3.8	4.6	4.3
Phosphate total (as P)	0.05	mg/L	0.77	0.23	0.27	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	25	42	36	65
Total Dissolved Solids	10	mg/L	^{Q19} 190	^{Q19} 440	240	430
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	2.1	2.0	1.6
Total Nitrogen (as N)	0.2	mg/L	1.6	2.6	9.3	5.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.79	2.4	0.92	1.1
Aluminium (filtered)	0.05	mg/L	0.63	2.1	0.77	1.0
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.004	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	0.002	0.003	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.73	0.31	< 0.05	< 0.05
Iron (filtered)	0.05	mg/L	0.60	0.26	< 0.05	0.05
Lead	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW27 Water	MW26 Water	MW25 Water	MW24 Water
Sample Matrix			M17-Ja12402	M17-Ja12432	M17-Ja12433	M17-Ja12434
Eurofins mgt Sample No.			Jan 20, 2017	Jan 20, 2017	Jan 20, 2017	Jan 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Alkali Metals						
Comments						R14
Calcium	0.5	mg/L	2.5	5.7	8.5	3.9
Magnesium	0.5	mg/L	5.2	7.2	15	14
Potassium	0.5	mg/L	2.1	2.8	4.0	3.1
Sodium	0.5	mg/L	19	60	40	41

Client Sample ID			MW23 Water	QC293 Water	QC294 Water
Sample Matrix			M17-Ja12435	M17-Ja12436	M17-Ja12437
Eurofins mgt Sample No.			Jan 20, 2017	Jan 20, 2017	Jan 20, 2017
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO₃)					
Acidity (as CaCO ₃)	10	mg/L	11	-	-
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	0.03	-	-
Chloride					
Chloride	1	mg/L	53	-	-
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	360	-	-
Nitrate & Nitrite (as N)					
Nitrate & Nitrite (as N)	0.05	mg/L	5.9	-	-
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	5.9	-	-
Nitrite (as N)					
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)					
Organic Nitrogen (as N)	0.2	mg/L	1.9	-	-
pH					
pH	0.1	pH Units	6.3	-	-
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as SO₄)					
Sulphate (as SO ₄)	5	mg/L	51	-	-
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	240	-	-
Total Kjeldahl Nitrogen (as N)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9	-	-
Total Nitrogen (as N)					
Total Nitrogen (as N)	0.2	mg/L	7.8	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO₃)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Carbonate Alkalinity (as CaCO₃)					
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO₃)					
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO₃)					
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Heavy Metals					
Aluminium					
Aluminium	0.05	mg/L	0.28	-	-
Aluminium (filtered)					
Aluminium (filtered)	0.05	mg/L	0.27	< 0.05	< 0.05
Arsenic					
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)					
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001

Client Sample ID			MW23	QC293	QC294
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ja12435	M17-Ja12436	M17-Ja12437
Date Sampled			Jan 20, 2017	Jan 20, 2017	Jan 20, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	-	-
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	26	-	-
Magnesium	0.5	mg/L	5.6	-	-
Potassium	0.5	mg/L	6.0	-	-
Sodium	0.5	mg/L	30	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 25, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 24, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 24, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 24, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 24, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 24, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 24, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 24, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 24, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 25, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 25, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 25, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 25, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 24, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 24, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 24, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 24, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jan 30, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jan 24, 2017	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	111			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	83			70-130	Pass		
Chloride	%	107			70-130	Pass		
Nitrate & Nitrite (as N)	%	88			70-130	Pass		
Nitrate (as N)	%	88			70-130	Pass		
Nitrite (as N)	%	94			70-130	Pass		
Phosphate total (as P)	%	121			70-130	Pass		
Phosphorus reactive (as P)	%	116			70-130	Pass		
Sulphate (as SO4)	%	113			70-130	Pass		
Total Dissolved Solids	%	93			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	95			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	99			70-130	Pass		
Total Alkalinity (as CaCO3)	%	99			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	77			70-130	Pass		
Arsenic	%	84			70-130	Pass		
Cadmium	%	84			70-130	Pass		
Chromium	%	84			70-130	Pass		
Copper	%	85			70-130	Pass		
Iron	%	74			70-130	Pass		
Lead	%	83			70-130	Pass		
Manganese	%	84			70-130	Pass		
Mercury	%	79			70-130	Pass		
Nickel	%	86			70-130	Pass		
Selenium	%	79			70-130	Pass		
Zinc	%	84			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	104			70-130	Pass		
Magnesium	%	108			70-130	Pass		
Potassium	%	94			70-130	Pass		
Sodium	%	97			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ja11882	NCP	%	84		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja11882	NCP	%	88		70-130	Pass	
Nitrate (as N)	M17-Ja11882	NCP	%	88		70-130	Pass	
Nitrite (as N)	M17-Ja11882	NCP	%	92		70-130	Pass	
Phosphorus reactive (as P)	M17-Ja12486	NCP	%	109		70-130	Pass	
Sulphate (as SO4)	M17-Ja12837	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO3)	M17-Ja12931	NCP	%	118		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO3)	M17-Ja12432	CP	%	113		70-130	Pass	
Total Alkalinity (as CaCO3)	M17-Ja12432	CP	%	125		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Ja12432	CP	%	65		70-130	Fail	Q08
Arsenic	M17-Ja12432	CP	%	99		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	M17-Ja12432	CP	%	95			70-130	Pass	
Chromium	M17-Ja12432	CP	%	94			70-130	Pass	
Copper	M17-Ja12432	CP	%	95			70-130	Pass	
Iron	M17-Ja12432	CP	%	91			70-130	Pass	
Lead	M17-Ja12432	CP	%	107			70-130	Pass	
Manganese	M17-Ja12432	CP	%	90			70-130	Pass	
Mercury	M17-Ja12432	CP	%	108			70-130	Pass	
Nickel	M17-Ja12432	CP	%	95			70-130	Pass	
Selenium	M17-Ja12432	CP	%	98			70-130	Pass	
Zinc	M17-Ja12432	CP	%	92			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ja12432	CP	%	102			70-130	Pass	
Magnesium	M17-Ja12432	CP	%	106			70-130	Pass	
Potassium	M17-Ja12432	CP	%	96			70-130	Pass	
Sodium	M17-Ja12432	CP	%	74			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ja12433	CP	%	124			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja12433	CP	%	89			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ja12402	CP	mg/L	40	39	2.0	30%	Pass	
Ammonia (as N)	M17-Ja12486	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Conductivity (at 25°C)	M17-Ja12402	CP	uS/cm	190	180	3.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja12486	NCP	mg/L	7.1	7.1	<1	30%	Pass	
Nitrate (as N)	M17-Ja12486	NCP	mg/L	7.1	7.1	<1	30%	Pass	
Nitrite (as N)	M17-Ja12486	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M17-Ja12402	CP	pH Units	4.2	4.2	pass	30%	Pass	
Phosphorus reactive (as P)	S17-Ja12084	NCP	mg/L	4.6	4.6	<1	30%	Pass	
Total Dissolved Solids	M17-Ja11788	NCP	mg/L	1300	1300	5.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja10877	NCP	mg/L	83	83	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja12402	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ja12402	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja12402	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja12402	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ja12402	CP	mg/L	0.79	0.79	<1	30%	Pass	
Arsenic	M17-Ja12402	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Ja12402	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Ja12402	CP	mg/L	0.002	0.002	1.0	30%	Pass	
Copper	S17-Ja12075	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Ja12402	CP	mg/L	0.73	0.74	<1	30%	Pass	
Lead	M17-Ja12402	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ja12402	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Ja12402	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Ja12402	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S17-Ja09891	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Ja14664	NCP	mg/L	0.006	< 0.005	14	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja12402	CP	mg/L	2.5	2.4	1.0	30%	Pass
Magnesium	M17-Ja12402	CP	mg/L	5.2	5.2	<1	30%	Pass
Potassium	M17-Ja12402	CP	mg/L	2.1	2.0	1.0	30%	Pass
Sodium	M17-Ja12402	CP	mg/L	19	19	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja12432	CP	mg/L	81	82	2.0	30%	Pass
Chloride	M17-Ja12432	CP	mg/L	140	150	8.0	30%	Pass
Sulphate (as SO ₄)	M17-Ja12432	CP	mg/L	42	44	3.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja12434	CP	mg/L	46	41	12	30%	Pass
Phosphate total (as P)	M17-Ja12434	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R14	These results have been confirmed by repeat analysis

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPTERT04483AA MONITORING EVENT 14**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 23, 2017 3:32 PM**
Eurofins | mgt reference: **531518**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

UNABLE TO COMPLETE B1 ON QC297 AS NO AMBER OR VIALS RECEIVED. 4 UNLABELLED TRIP BLANK VIALS RECEIVED AND PLACED ON HOLD

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **531518-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA MONITORING EVENT 14
Received Date Jan 23, 2017

Client Sample ID			MW35 Water	MW33 Water	MW32 Water	MW31 Water
Sample Matrix						
Eurofins mgt Sample No.			M17-Ja13714	M17-Ja13741	M17-Ja13742	M17-Ja13743
Date Sampled			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	100	30	35	49
Ammonia (as N)	0.01	mg/L	0.45	0.28	0.26	0.49
Chloride	1	mg/L	42	71	130	75
Conductivity (at 25°C)	1	uS/cm	180	350	460	270
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	0.18	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	6.5	0.5	1.0	2.0
pH	0.1	pH Units	4.6	6.8	5.8	5.1
Phosphate total (as P)	0.05	mg/L	0.56	0.08	0.38	0.91
Phosphorus reactive (as P)	0.05	mg/L	0.56	0.06	0.30	0.73
Sulphate (as SO ₄)	5	mg/L	25	< 5	14	16
Total Dissolved Solids	10	mg/L	^{Q19} 330	230	290	^{Q19} 270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	7.0	0.8	1.3	2.5
Total Nitrogen (as N)	0.2	mg/L	7.0	0.8	1.3	2.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	69	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	69	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.54	0.23	0.34	1.1
Aluminium (filtered)	0.05	mg/L	0.50	0.22	0.30	1.0
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.002
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.21	0.10	0.16	0.34
Iron (filtered)	0.05	mg/L	0.20	0.08	0.13	0.31
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW35 Water	MW33 Water	MW32 Water	MW31 Water
Sample Matrix			M17-Ja13714	M17-Ja13741	M17-Ja13742	M17-Ja13743
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.007	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	0.008	0.009	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	9.5	28	8.0	6.6
Magnesium	0.5	mg/L	2.5	5.4	7.6	5.6
Potassium	0.5	mg/L	11	2.9	6.0	5.1
Sodium	0.5	mg/L	18	37	69	46

Client Sample ID			MW30 Water	MW29 Water	MW22 Water	MW21 Water
Sample Matrix			M17-Ja13744	M17-Ja13745	M17-Ja13746	M17-Ja13747
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	16	58	150	82
Ammonia (as N)	0.01	mg/L	0.03	0.17	0.09	0.07
Chloride	1	mg/L	38	60	110	79
Conductivity (at 25°C)	1	uS/cm	200	300	600	360
Nitrate & Nitrite (as N)	0.05	mg/L	3.4	< 0.05	< 0.05	1.9
Nitrate (as N)	0.02	mg/L	3.3	< 0.02	< 0.02	1.9
Nitrite (as N)	0.02	mg/L	0.03	0.03	0.03	0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.3	0.4	1.6
pH	0.1	pH Units	6.5	4.3	3.7	4.2
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	12	51	150	65
Total Dissolved Solids	10	mg/L	130	^{Q19} 280	340	200
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.5	0.5	1.7
Total Nitrogen (as N)	0.2	mg/L	3.8	1.5	0.5	3.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.33	1.2	7.3	5.4
Aluminium (filtered)	0.05	mg/L	0.31	1.1	7.2	5.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00007	< 0.00005

Client Sample ID			MW30 Water	MW29 Water	MW22 Water	MW21 Water
Sample Matrix			M17-Ja13744	M17-Ja13745	M17-Ja13746	M17-Ja13747
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	0.20	2.5	6.4
Iron (filtered)	0.05	mg/L	< 0.05	0.17	2.5	6.3
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.017	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.017	0.005
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.006	< 0.005	0.007
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	15	8.3	26	2.7
Magnesium	0.5	mg/L	2.7	14	7.0	4.8
Potassium	0.5	mg/L	< 0.5	1.9	1.1	2.0
Sodium	0.5	mg/L	20	34	54	45

Client Sample ID			MW20 Water	MW19 Water	MW18 Water	MW17 Water
Sample Matrix			M17-Ja13748	M17-Ja13749	M17-Ja13750	M17-Ja13751
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	83	310	47	48
Ammonia (as N)	0.01	mg/L	0.14	0.11	0.11	0.03
Chloride	1	mg/L	53	160	99	34
Conductivity (at 25°C)	1	uS/cm	280	940	320	180
Nitrate & Nitrite (as N)	0.05	mg/L	1.5	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	1.5	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	2.2	< 0.2	< 0.2
pH	0.1	pH Units	4.3	3.4	4.6	4.0
Phosphate total (as P)	0.05	mg/L	< 0.05	^{G01} < 0.5	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	47	180	25	40
Total Dissolved Solids	10	mg/L	180	580	190	120
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	2.3	0.2	0.2
Total Nitrogen (as N)	0.2	mg/L	1.8	2.3	0.2	0.2

Client Sample ID			MW20 Water	MW19 Water	MW18 Water	MW17 Water
Sample Matrix			M17-Ja13748	M17-Ja13749	M17-Ja13750	M17-Ja13751
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	7.3	30	1.6	0.86
Aluminium (filtered)	0.05	mg/L	7.1	29	1.5	0.85
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.006	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.006	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.44	0.07	0.34	0.65
Iron (filtered)	0.05	mg/L	0.33	0.06	0.13	0.52
Lead	0.001	mg/L	< 0.001	0.004	0.002	0.002
Lead (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.011	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.006	0.011	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	0.006	< 0.005	0.014
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	< 0.5	1.2	3.8	3.6
Magnesium	0.5	mg/L	3.1	5.4	6.0	3.2
Potassium	0.5	mg/L	< 0.5	< 0.5	1.3	1.0
Sodium	0.5	mg/L	39	96	44	25

Client Sample ID			MW16 Water	QC296 Water	QC295 Water	QC297 Water
Sample Matrix			M17-Ja13752	M17-Ja13753	M17-Ja13754	M17-Ja13755
Eurofins mgt Sample No.			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	73	-	-	35
Ammonia (as N)	0.01	mg/L	0.13	-	-	0.10
Chloride	1	mg/L	64	-	-	85
Conductivity (at 25°C)	1	uS/cm	300	-	-	310
Nitrate & Nitrite (as N)	0.05	mg/L	1.6	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	1.5	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	0.03

Client Sample ID			MW16	QC296	QC295	QC297
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ja13752	M17-Ja13753	M17-Ja13754	M17-Ja13755
Date Sampled			Jan 23, 2017	Jan 23, 2017	Jan 23, 2017	Jan 23, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	-	-	0.2
pH	0.1	pH Units	4.1	-	-	4.6
Phosphate total (as P)	0.05	mg/L	0.05	-	-	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-	< 0.05
Sulphate (as SO4)	5	mg/L	54	-	-	24
Total Dissolved Solids	10	mg/L	180	-	-	180
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	-	-	0.3
Total Nitrogen (as N)	0.2	mg/L	1.9	-	-	0.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	-	-	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	-	-	< 20
Heavy Metals						
Aluminium	0.05	mg/L	3.6	-	-	1.7
Aluminium (filtered)	0.05	mg/L	3.6	< 0.05	< 0.05	1.4
Arsenic	0.001	mg/L	< 0.001	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	-	-	< 0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.66	-	-	0.42
Iron (filtered)	0.05	mg/L	0.21	< 0.05	< 0.05	0.18
Lead	0.001	mg/L	0.008	-	-	0.002
Lead (filtered)	0.001	mg/L	0.006	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	-	-	0.002
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	2.8	-	-	3.8
Magnesium	0.5	mg/L	6.0	-	-	6.3
Potassium	0.5	mg/L	1.2	-	-	1.3
Sodium	0.5	mg/L	38	-	-	45

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 27, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 25, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 25, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 25, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 27, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 25, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 25, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 27, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 25, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 25, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 25, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 25, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 25, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 27, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 25, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 25, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 25, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jan 31, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jan 27, 2017	7 Day

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Jan 23, 2017 3:32 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	531518	Due:	Jan 31, 2017
Project Name:	NL_BASELINE GW_SW MONITORING LABORATORY	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPT04483AA MONITORING EVENT 14	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	CANCELLED	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Total Nitrogen Set (as N)	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X	X			X												X	X	X								X	X					
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X			X	X		X	X	X	X	X	X	X	X	X	X	X				X	X				X	X							
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
External Laboratory																																													
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																								
1	MW35	Jan 23, 2017		Water	M17-Ja13714	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
2	MW33	Jan 23, 2017		Water	M17-Ja13741	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MW32	Jan 23, 2017		Water	M17-Ja13742	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW31	Jan 23, 2017		Water	M17-Ja13743	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MW30	Jan 23, 2017		Water	M17-Ja13744	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MW29	Jan 23, 2017		Water	M17-Ja13745	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW22	Jan 23, 2017		Water	M17-Ja13746	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW21	Jan 23, 2017		Water	M17-Ja13747	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW20	Jan 23, 2017		Water	M17-Ja13748	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	111			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	88			70-130	Pass		
Chloride	%	113			70-130	Pass		
Nitrate & Nitrite (as N)	%	100			70-130	Pass		
Nitrate (as N)	%	100			70-130	Pass		
Nitrite (as N)	%	97			70-130	Pass		
Phosphate total (as P)	%	93			70-130	Pass		
Phosphorus reactive (as P)	%	115			70-130	Pass		
Sulphate (as SO ₄)	%	112			70-130	Pass		
Total Dissolved Solids	%	91			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	89			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	93			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	84			70-130	Pass		
Arsenic	%	94			70-130	Pass		
Cadmium	%	95			70-130	Pass		
Chromium	%	86			70-130	Pass		
Copper	%	88			70-130	Pass		
Iron	%	87			70-130	Pass		
Lead	%	87			70-130	Pass		
Manganese	%	90			70-130	Pass		
Mercury	%	82			70-130	Pass		
Nickel	%	88			70-130	Pass		
Selenium	%	94			70-130	Pass		
Zinc	%	108			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	105			70-130	Pass		
Magnesium	%	109			70-130	Pass		
Potassium	%	97			70-130	Pass		
Sodium	%	113			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M17-Ja13217	NCP	%	92		70-130	Pass	
Phosphate total (as P)	M17-Ja13850	NCP	%	103		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja14665	NCP	%	73		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ja13815	NCP	%	73		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Ja13741	CP	%	91		70-130	Pass	
Arsenic	M17-Ja13741	CP	%	93		70-130	Pass	
Cadmium	M17-Ja13741	CP	%	102		70-130	Pass	
Chromium	M17-Ja13741	CP	%	85		70-130	Pass	
Copper	M17-Ja13741	CP	%	84		70-130	Pass	
Iron	M17-Ja13741	CP	%	87		70-130	Pass	
Lead	M17-Ja13741	CP	%	82		70-130	Pass	
Manganese	M17-Ja13741	CP	%	93		70-130	Pass	
Mercury	M17-Ja13741	CP	%	76		70-130	Pass	
Nickel	M17-Ja13741	CP	%	83		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Selenium	M17-Ja13741	CP	%	101			70-130	Pass	
Zinc	M17-Ja13741	CP	%	87			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ja13741	CP	%	120			70-130	Pass	
Magnesium	M17-Ja13741	CP	%	116			70-130	Pass	
Potassium	M17-Ja13741	CP	%	103			70-130	Pass	
Sodium	M17-Ja13741	CP	%	120			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M17-Ja13743	CP	%	123			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Ja13746	CP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Ja13748	CP	%	85			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja13748	CP	%	94			70-130	Pass	
Nitrate (as N)	M17-Ja13748	CP	%	94			70-130	Pass	
Nitrite (as N)	M17-Ja13748	CP	%	95			70-130	Pass	
Sulphate (as SO ₄)	M17-Ja13748	CP	%	109			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M17-Ja13755	CP	%	118			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Ja13607	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja13607	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ja13607	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Ja13607	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ja13714	CP	mg/L	0.54	0.53	2.0	30%	Pass	
Arsenic	M17-Ja13714	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Ja10750	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M17-Ja13714	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M17-Ja13714	CP	mg/L	0.002	0.002	7.0	30%	Pass	
Iron	M17-Ja13714	CP	mg/L	0.21	0.21	2.0	30%	Pass	
Lead	M17-Ja13714	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ja13714	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Ja13714	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Selenium	M17-Ja10740	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S17-Ja09891	NCP	mg/L	0.008	0.007	16	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Ja13714	CP	mg/L	9.5	9.5	<1	30%	Pass	
Magnesium	M17-Ja13714	CP	mg/L	2.5	2.5	1.0	30%	Pass	
Potassium	M17-Ja13714	CP	mg/L	11	12	1.0	30%	Pass	
Sodium	M17-Ja13714	CP	mg/L	18	19	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ja13742	CP	mg/L	35	30	13	30%	Pass	
Conductivity (at 25°C)	M17-Ja13742	CP	uS/cm	460	460	1.0	30%	Pass	
pH	M17-Ja13742	CP	pH Units	5.8	5.8	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja13742	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja13742	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja13742	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja13742	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ja13745	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M17-Ja13745	CP	mg/L	280	300	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Ja13747	CP	mg/L	79	75	4.6	30%	Pass
Phosphate total (as P)	M17-Ja13747	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as SO ₄)	M17-Ja13747	CP	mg/L	65	64	2.2	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Ja13747	CP	mg/L	1.7	1.7	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Ja13748	CP	mg/L	7.3	7.4	1.0	30%	Pass
Arsenic	M17-Ja13748	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium	M17-Ja13748	CP	mg/L	0.001	< 0.001	5.0	30%	Pass
Copper	M17-Ja13748	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M17-Ja13748	CP	mg/L	0.44	0.44	<1	30%	Pass
Lead	M17-Ja13748	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	M17-Ja13748	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Ja13748	CP	mg/L	0.006	0.006	1.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ja13748	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Magnesium	M17-Ja13748	CP	mg/L	3.1	3.1	1.0	30%	Pass
Potassium	M17-Ja13748	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Sodium	M17-Ja13748	CP	mg/L	39	40	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Ja13752	CP	mg/L	73	70	4.0	30%	Pass
Conductivity (at 25°C)	M17-Ja13752	CP	uS/cm	300	320	11	30%	Pass
pH	M17-Ja13752	CP	pH Units	4.1	4.1	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja13752	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ja13752	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja13752	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ja13752	CP	mg/L	< 20	< 20	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jan 24, 2017 1:40 PM**
Eurofins | mgt reference: **531625**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

MW16 NOT RECEIVED | 64-73 REC SYD 27/1 EM

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **531625-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Jan 24, 2017

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix						
Eurofins mgt Sample No.			M17-Ja14664	M17-Ja14665	M17-Ja14666	M17-Ja14667
Date Sampled			Jan 24, 2017	Jan 24, 2017	Jan 24, 2017	Jan 24, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	33	45	43	42
Ammonia (as N)	0.01	mg/L	0.46	0.14	0.05	0.03
Chloride	1	mg/L	45	58	67	54
Conductivity (at 25°C)	1	uS/cm	250	290	330	220
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	1.2	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.05	1.2	0.03	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.4	< 0.2	< 0.2
pH	0.1	pH Units	5.7	4.5	4.2	4.3
Phosphate total (as P)	0.05	mg/L	0.07	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	51	40	46	34
Total Dissolved Solids	10	mg/L	170	^{Q19} 690	180	140
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.5	< 0.2	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.7	1.7	< 0.2	< 0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.21	12	2.8	2.7
Aluminium (filtered)	0.05	mg/L	0.11	12	1.9	2.6
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.010	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.012	0.003	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.73	1.3	1.7	0.60
Iron (filtered)	0.05	mg/L	< 0.05	1.2	0.58	0.16
Lead	0.001	mg/L	< 0.001	0.007	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001

Client Sample ID			MW15 Water	MW14 Water	MW13 Water	MW12 Water
Sample Matrix			M17-Ja14664	M17-Ja14665	M17-Ja14666	M17-Ja14667
Eurofins mgt Sample No.			Jan 24, 2017	Jan 24, 2017	Jan 24, 2017	Jan 24, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.003	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.003	0.002
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	0.003
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Zinc	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	7.2	5.6	6.1	0.8
Magnesium	0.5	mg/L	8.1	3.7	6.6	5.1
Potassium	0.5	mg/L	1.8	< 0.5	1.3	< 0.5
Sodium	0.5	mg/L	27	22	39	30

Client Sample ID			MW11 Water	MW10 Water	MW9 Water	SWL5-1 Water
Sample Matrix			M17-Ja14668	M17-Ja14669	M17-Ja14670	M17-Ja14671
Eurofins mgt Sample No.			Jan 24, 2017	Jan 24, 2017	Jan 24, 2017	Jan 24, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	56	23	25	14
Ammonia (as N)	0.01	mg/L	0.02	0.10	0.08	0.02
Chloride	1	mg/L	52	24	18	81
Conductivity (at 25°C)	1	uS/cm	270	300	120	330
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	0.49	1.1	< 0.05
Nitrate (as N)	0.02	mg/L	0.12	0.48	1.0	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.8	0.2	2.4
pH	0.1	pH Units	4.4	7.4	6.2	6.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.20
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	47	18	13	17
Total Dissolved Solids	10	mg/L	160	^{Q19} 210	^{Q19} 99	^{Q19} 250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.9	0.3	2.4
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.4	1.4	2.4
Turbidity	1	NTU	-	-	-	22
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	99	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	99	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	5.1	0.12	0.28	0.43
Aluminium (filtered)	0.05	mg/L	5.1	0.08	0.24	0.34
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW11 Water	MW10 Water	MW9 Water	SWL5-1 Water
Sample Matrix			M17-Ja14668	M17-Ja14669	M17-Ja14670	M17-Ja14671
Eurofins mgt Sample No.			Jan 24, 2017	Jan 24, 2017	Jan 24, 2017	Jan 24, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.62	0.84	0.52	0.17
Iron (filtered)	0.05	mg/L	0.20	0.53	0.29	0.11
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	< 0.5	42	4.8	14
Magnesium	0.5	mg/L	10	3.8	1.3	5.6
Potassium	0.5	mg/L	< 0.5	1.0	0.6	1.6
Sodium	0.5	mg/L	35	8.5	9.8	40
Pathogens						
E.coli	1	MPN/100mL	-	-	-	230
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	1200

Client Sample ID			QC298 Water	QC299 Water
Sample Matrix			M17-Ja14672	M17-Ja14673
Eurofins mgt Sample No.			Jan 24, 2017	Jan 24, 2017
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Jan 25, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Jan 25, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Jan 25, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Jan 25, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Jan 25, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Jan 25, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Jan 25, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Jan 25, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Jan 25, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Jan 25, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 27, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Jan 27, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Jan 27, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Jan 27, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Jan 25, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Jan 25, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Jan 25, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Jan 25, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Jan 25, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Jan 25, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Jan 25, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Jan 25, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Jan 24, 2017 1:40 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 531625	Due: Feb 1, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X		X	X	X		X	X	X		X		X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X	X		X		X	
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
External Laboratory																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																										
1	MW15	Jan 24, 2017		Water	M17-Ja14664	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW14	Jan 24, 2017		Water	M17-Ja14665	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW13	Jan 24, 2017		Water	M17-Ja14666	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW12	Jan 24, 2017		Water	M17-Ja14667	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW11	Jan 24, 2017		Water	M17-Ja14668	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW10	Jan 24, 2017		Water	M17-Ja14669	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	MW9	Jan 24, 2017		Water	M17-Ja14670	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	SWL5-1	Jan 24, 2017		Water	M17-Ja14671	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	QC298	Jan 24, 2017		Water	M17-Ja14672			X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	111			70-130	Pass		
Ammonia (as N)	%	84			70-130	Pass		
Chloride	%	115			70-130	Pass		
Nitrate & Nitrite (as N)	%	88			70-130	Pass		
Nitrate (as N)	%	88			70-130	Pass		
Nitrite (as N)	%	95			70-130	Pass		
Phosphate total (as P)	%	98			70-130	Pass		
Phosphorus reactive (as P)	%	115			70-130	Pass		
Sulphate (as SO ₄)	%	120			70-130	Pass		
Total Dissolved Solids	%	91			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	95			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	100			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	105			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	77			70-130	Pass		
Arsenic	%	84			70-130	Pass		
Cadmium	%	84			70-130	Pass		
Chromium	%	84			70-130	Pass		
Copper	%	85			70-130	Pass		
Iron	%	74			70-130	Pass		
Lead	%	83			70-130	Pass		
Manganese	%	84			70-130	Pass		
Mercury	%	79			70-130	Pass		
Nickel	%	86			70-130	Pass		
Selenium	%	79			70-130	Pass		
Zinc	%	84			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	105			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	104			70-130	Pass		
Sodium	%	102			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ja12525	NCP	%	86		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ja12525	NCP	%	82		70-130	Pass	
Nitrate (as N)	M17-Ja12525	NCP	%	82		70-130	Pass	
Nitrite (as N)	M17-Ja12525	NCP	%	92		70-130	Pass	
Phosphate total (as P)	M17-Ja13606	NCP	%	107		70-130	Pass	
Phosphorus reactive (as P)	B17-Ja13988	NCP	%	84		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja13606	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M17-Ja13815	NCP	%	73		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	S17-Ja15728	NCP	%	103		70-130	Pass	
Magnesium	S17-Ja15728	NCP	%	108		70-130	Pass	
Potassium	S17-Ja15728	NCP	%	98		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja14665	CP	%	73			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja14665	CP	%	121			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M17-Ja14665	CP	%	89			70-130	Pass	
Arsenic	M17-Ja14665	CP	%	84			70-130	Pass	
Cadmium	M17-Ja14665	CP	%	86			70-130	Pass	
Chromium	M17-Ja14665	CP	%	95			70-130	Pass	
Copper	M17-Ja14665	CP	%	83			70-130	Pass	
Iron	M17-Ja14665	CP	%	85			70-130	Pass	
Lead	M17-Ja14665	CP	%	85			70-130	Pass	
Manganese	M17-Ja14665	CP	%	85			70-130	Pass	
Mercury	M17-Ja14665	CP	%	80			70-130	Pass	
Nickel	M17-Ja14665	CP	%	88			70-130	Pass	
Selenium	M17-Ja14665	CP	%	85			70-130	Pass	
Zinc	M17-Ja14665	CP	%	83			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Sodium	M17-Ja14665	CP	%	122			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ja14668	CP	%	92			70-130	Pass	
Sulphate (as SO ₄)	M17-Ja14668	CP	%	92			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	M17-Ja14669	CP	%	92			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ja14664	CP	mg/L	33	33	1.0	30%	Pass	
Ammonia (as N)	M17-Ja12525	NCP	mg/L	0.31	0.29	5.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ja12525	NCP	mg/L	1.7	1.7	2.0	30%	Pass	
Nitrate (as N)	M17-Ja12525	NCP	mg/L	1.6	1.6	2.0	30%	Pass	
Nitrite (as N)	M17-Ja12525	NCP	mg/L	0.07	0.07	2.0	30%	Pass	
Phosphate total (as P)	M17-Ja13605	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus reactive (as P)	M17-Ja14664	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	B17-Ja13711	NCP	mg/L	730	750	2.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ja13605	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ja14664	CP	mg/L	0.21	0.21	2.0	30%	Pass	
Arsenic	M17-Ja14664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Ja12402	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M17-Ja14664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M17-Ja14664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Ja14664	CP	mg/L	0.73	0.75	3.0	30%	Pass	
Lead	M17-Ja14664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ja14664	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Ja09421	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Ja14664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S17-Ja09891	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Ja14664	CP	mg/L	0.006	< 0.005	14	30%	Pass	

Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Ja14664	CP	mg/L	7.2	7.0	3.0	30%	Pass	
Magnesium	M17-Ja14664	CP	mg/L	8.1	8.0	1.0	30%	Pass	
Potassium	M17-Ja14664	CP	mg/L	1.8	1.8	<1	30%	Pass	
Sodium	M17-Ja14664	CP	mg/L	27	27	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ja14665	CP	mg/L	45	44	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M17-Ja14667	CP	uS/cm	220	270	17	30%	Pass	
pH	M17-Ja14667	CP	pH Units	4.3	4.3	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja14667	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ja14667	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja14667	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja14667	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-Ja14668	CP	mg/L	52	51	1.2	30%	Pass	
Conductivity (at 25°C)	M17-Ja14668	CP	uS/cm	270	270	1.0	30%	Pass	
pH	M17-Ja14668	CP	pH Units	4.4	4.4	pass	30%	Pass	
Sulphate (as SO ₄)	M17-Ja14668	CP	mg/L	47	48	2.1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ja14668	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ja14668	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Ja14668	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ja14668	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	M17-Ja14670	CP	mg/L	0.3	< 0.2	89	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M17-Ja14671	CP	mg/L	0.20	0.18	14	30%	Pass	
Turbidity	B17-Ja13987	NCP	NTU	10	10	1.0	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1700437**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : EN/007/14
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 8
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 18-Jan-2017 16:00
Date Analysis Commenced : 19-Jan-2017
Issue Date : 26-Jan-2017 19:21



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Bek Simpfendorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- MW006, estimate (~) is reported where there are many non-target colonies; the typical colonies may be masked by overgrowth of non-target organisms.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC290	QC287	QC286	QC285	QC283
Client sampling date / time				18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	
Compound	CAS Number	LOR	Unit	EP1700437-001	EP1700437-002	EP1700437-003	EP1700437-004	EP1700437-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.56	7.96	7.95	6.24	7.56	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	7170	2130	7520	8610	2460	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	4440	1590	4700	5690	1660	
EA045: Turbidity									
Turbidity	----	0.1	NTU	8.5	----	10.2	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	61	200	194	28	214	
Total Alkalinity as CaCO3	----	1	mg/L	61	200	194	28	214	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	5	5	7	18	12	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	30	105	175	13	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	2100	622	2400	2930	735	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	19	56	69	27	94	
Magnesium	7439-95-4	1	mg/L	137	40	183	191	55	
Sodium	7440-23-5	1	mg/L	1270	336	1210	1460	368	
Potassium	7440-09-7	1	mg/L	34	4	41	56	7	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.00006	<0.00004	0.00049	<0.00004	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	54	28	24	10	10	
Arsenic	7440-38-2	0.2	µg/L	0.6	0.4	1.9	1.5	<0.2	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
Chromium	7440-47-3	0.2	µg/L	0.6	0.4	0.4	0.6	0.9	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC290	QC287	QC286	QC285	QC283
Client sampling date / time					18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		EP1700437-001	EP1700437-002	EP1700437-003	EP1700437-004	EP1700437-005
					Result	Result	Result	Result	Result
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L		2290	124	428	2540	155
Lead	7439-92-1	0.1	µg/L		1.1	<0.1	<0.1	1.0	<0.1
Manganese	7439-96-5	0.5	µg/L		26.0	14.9	65.7	15.4	5.6
Nickel	7440-02-0	0.5	µg/L		3.4	<0.5	1.7	2.6	<0.5
Selenium	7782-49-2	0.2	µg/L		0.3	<0.2	0.5	0.3	<0.2
Zinc	7440-66-6	1	µg/L		2	<1	<1	2	2
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L		71	11200	67	18300	3680
Arsenic	7440-38-2	0.2	µg/L		0.6	7.1	2.0	5.5	1.8
Cadmium	7440-43-9	0.05	µg/L		<0.05	0.05	<0.05	0.13	<0.05
Chromium	7440-47-3	0.2	µg/L		0.9	23.2	0.6	53.6	7.7
Copper	7440-50-8	0.5	µg/L		0.6	2.9	<0.5	10.2	4.9
Iron	7439-89-6	2	µg/L		2720	7220	1080	5180	6080
Lead	7439-92-1	0.1	µg/L		1.2	11.2	0.2	75.9	3.7
Manganese	7439-96-5	0.5	µg/L		29.0	22.2	105	16.7	10.2
Selenium	7782-49-2	0.2	µg/L		0.4	2.6	0.5	2.2	1.6
Nickel	7440-02-0	0.5	µg/L		3.9	11.7	1.9	5.5	4.4
Zinc	7440-66-6	1	µg/L		2	17	2	7	72
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.82	0.11	0.04	0.19	0.33
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.02	0.02	<0.01	0.05	0.03
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	0.02	<0.01	0.05	0.03
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		4.6	0.6	2.8	0.5	1.1
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		4.6	0.6	2.8	0.6	1.1
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.15	0.13	0.71	0.20	0.10
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L		0.04	0.11	0.46	0.02	0.06



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC290	QC287	QC286	QC285	QC283
Client sampling date / time				18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	
Compound	CAS Number	LOR	Unit	EP1700437-001	EP1700437-002	EP1700437-003	EP1700437-004	EP1700437-005	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	63.6	22.2	73.8	86.8	25.3	
Total Cations	----	0.01	meq/L	68.3	20.8	72.2	82.0	25.4	
Ionic Balance	----	0.01	%	3.62	3.17	1.08	2.87	0.24	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	~63	----	~45	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	~63	----	~45	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC282	----	----	----	----
Client sampling date / time		18-Jan-2017 00:00			----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1700437-006	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	5.83	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	4620	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	2750	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	7.7	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	3	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	3	----	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	5	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	148	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	1430	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	12	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	102	----	----	----	----	
Sodium	7440-23-5	1	mg/L	856	----	----	----	----	
Potassium	7440-09-7	1	mg/L	19	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	62	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	<0.2	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC282	----	----	----	----
Client sampling date / time				18-Jan-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1700437-006	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	49	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	42.8	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	2.9	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	2	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	84	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	<0.2	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	
Iron	7439-89-6	2	µg/L	155	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	<0.1	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	44.6	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	<0.2	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	3.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	2	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.05	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.0	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	1.0	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.10	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC282	----	----	----	----
Client sampling date / time				18-Jan-2017 00:00	----	----	----	----	----
Compound	CAS Number	LOR	Unit	EP1700437-006	-----	-----	-----	-----	-----
Result				Result	----	----	----	----	----
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	43.5	----	----	----	----	----
Total Cations	----	0.01	meq/L	46.7	----	----	----	----	----
Ionic Balance	----	0.01	%	3.58	----	----	----	----	----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	220	----	----	----	----	----
<i>Escherichia coli</i>	----	1	CFU/100mL	220	----	----	----	----	----

QUALITY CONTROL REPORT

Work Order	: EP1700437	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 18-Jan-2017
Order number	: ----	Date Analysis Commenced	: 19-Jan-2017
C-O-C number	: ----	Issue Date	: 26-Jan-2017
Sampler	: ----		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Bek Simpfordorfer	Inorganic Supervisor	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 726548)									
EP1700428-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	3.35	3.33	0.599	0% - 20%
EP1700431-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.74	6.82	1.18	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 726550)									
EP1700449-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.28	8.28	0.00	0% - 20%
EP1700449-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.25	8.26	0.121	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 726549)									
EP1700431-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	445	434	2.49	0% - 20%
EP1700449-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1180	1180	0.421	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 730035)									
EP1700437-001	QC290	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4440	4320	2.62	0% - 20%
EP1700449-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	802	796	0.751	0% - 20%
EA045: Turbidity (QC Lot: 726672)									
EP1700414-005	Anonymous	EA045: Turbidity	----	0.1	NTU	0.4	0.3	0.00	No Limit
EP1700419-005	Anonymous	EA045: Turbidity	----	0.1	NTU	255	254	0.393	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 726546)									
EP1700424-008	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	61	61	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	61	61	0.00	0% - 20%
EP1700422-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	50	49	2.76	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	50	49	2.76	0% - 20%
ED038A: Acidity (QC Lot: 729280)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED038A: Acidity (QC Lot: 729280) - continued									
EP1700246-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	12	12	0.00	0% - 50%
EP1700437-006	QC282	ED038: Acidity as CaCO3	----	1	mg/L	5	5	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 726453)									
EP1700437-001	QC290	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	149	154	3.49	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 726452)									
EP1700431-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	100	101	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 728367)									
EP1700437-001	QC290	ED093F: Calcium	7440-70-2	1	mg/L	19	18	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	137	139	1.45	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	1270	1240	2.63	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	34	35	0.00	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 730374)									
EP1700370-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 730378)									
EP1700437-001	QC290	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 729131)									
EP1700437-001	QC290	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	2290	2330	1.70	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 729132)									
ES1701066-002	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.20	0.12	46.5	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.4	0.4	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	2.4	2.4	0.00	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.5	<0.2	85.7	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<1.0	<0.5	66.7	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	426	418	1.82	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	2.0	2.1	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	31	30	3.81	0% - 20%
EP1700437-001	QC290	EG094A-F: Aluminium	7429-90-5	5	µg/L	6	5	0.00	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	1.1	1.1	0.00	0% - 50%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.6	0.6	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.6	0.6	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	26.0	26.9	3.62	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	3.4	3.5	2.97	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	2	2	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	54	55	0.00	0% - 50%
		EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 729143)							
EP1700433-001	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.9	0.8	0.00	No Limit

Page : 4 of 8
 Work Order : EP1700437
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 729143) - continued									
EP1700433-001	Anonymous	EG094B-T: Iron	7439-89-6	2	µg/L	70	68	2.43	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 729144)									
EP1700433-001	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.3	0.2	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	2.2	1.4	40.6	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	22.4	22.4	0.00	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	5.9	6.1	2.86	0% - 50%
		EG094A-T: Zinc	7440-66-6	1	µg/L	7	6	0.00	No Limit
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	<5	0.00	No Limit		
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 732749)									
EP1700457-005	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.03	0.00	No Limit
EP1700437-001	QC290	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.82	0.82	0.00	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 726451)									
EP1700431-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 732750)									
EP1700437-001	QC290	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 728192)									
EP1700437-001	QC290	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.6	4.5	0.00	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 728191)									
EP1700437-001	QC290	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.15	0.14	0.00	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 726454)									
EP1700437-001	QC290	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.04	0.03	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 726548)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA005P: pH by PC Titrator (QCLot: 726550)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 726549)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.2	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 730035)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.8	83	111	
				<10	1000 mg/L	109	70	130	
EA045: Turbidity (QCLot: 726672)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	103	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 726546)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	106	76	126	
				<1	200 mg/L	101	90	106	
ED038A: Acidity (QCLot: 729280)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	105	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 726453)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	90.3	89	113	
				<1	100 mg/L	107	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 726452)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	92.2	84	120	
				<1	1000 mg/L	93.2	84	110	
ED093F: Dissolved Major Cations (QCLot: 728367)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	94.8	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	97.6	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.3	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	97.7	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 730374)									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG035F: Dissolved Mercury by FIMS (QCLot: 730374) - continued									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	100	83	105	
EG035T: Total Mercury by FIMS (QCLot: 730378)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	102	85	105	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 729131)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	112	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	111	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 729132)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	110	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	111	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	109	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	111	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	107	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	106	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	107	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	107	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 729143)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	115	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	111	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 729144)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	111	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	111	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	106	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	108	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	108	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	101	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	103	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	105	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	102	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 732749)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	107	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 726451)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 732750)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 728192)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.6	82	110	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 728191)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	79.9	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 726454)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	104	87	115	

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 726453)							
EP1700437-001	QC290	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	96.1	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 726452)							
EP1700431-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	88.8	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 730374)							
EP1700370-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	88.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 730378)							
EP1700437-006	QC282	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	85.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 729132)							
EP1700437-002	QC287	EG094A-F: Arsenic	7440-38-2	50 µg/L	110	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	99.2	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	102	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	102	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	93.4	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	98.0	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	102	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	93.0	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 729144)							
EP1700437-001	QC290	EG094A-T: Arsenic	7440-38-2	50 µg/L	122	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	102	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	109	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	96.1	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	99.4	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	108	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	99.9	70	130

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 Work Order : EP1700437
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 732749)							
EP1700389-011	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	# Not Determined	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 726451)							
EP1700431-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	72.8	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 732750)							
EP1700437-001	QC290	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	89.7	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 728192)							
EP1700437-001	QC290	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.9	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 728191)							
EP1700437-001	QC290	EK067G: Total Phosphorus as P	----	1 mg/L	84.7	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 726454)							
EP1700437-001	QC290	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	105	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1700437	Page	: 1 of 10
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 18-Jan-2017
Site	: ----	Issue Date	: 26-Jan-2017
Sampler	: ----	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	EP1700389--011	Anonymous	Ammonia as N	7664-41-7	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
QC290,	QC287,	----	----	----	19-Jan-2017	18-Jan-2017	1
QC286,	QC285,						
QC283,	QC282						

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Dissolved Mercury by FIMS - Low Level	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
QC290,	18-Jan-2017	QC287,	----	----	----	19-Jan-2017	18-Jan-2017	*
QC286,		QC285,						
QC283,		QC282						



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	15-Feb-2017	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	23-Jan-2017	25-Jan-2017	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045) QC290, QC282, QC286	18-Jan-2017	----	----	----	19-Jan-2017	20-Jan-2017	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	01-Feb-2017	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	23-Jan-2017	01-Feb-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	15-Feb-2017	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	15-Feb-2017	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	25-Jan-2017	25-Jan-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	24-Jan-2017	15-Feb-2017	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	24-Jan-2017	15-Feb-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	23-Jan-2017	17-Jul-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	23-Jan-2017	17-Jul-2017	✓	23-Jan-2017	17-Jul-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	25-Jan-2017	15-Feb-2017	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	20-Jan-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	25-Jan-2017	15-Feb-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	24-Jan-2017	15-Feb-2017	✓	25-Jan-2017	15-Feb-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	24-Jan-2017	15-Feb-2017	✓	25-Jan-2017	15-Feb-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
QC290, QC286, QC283, QC287, QC285, QC282	18-Jan-2017	----	----	----	19-Jan-2017	20-Jan-2017	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006)							
QC290, QC282, QC286,	18-Jan-2017	----	----	----	19-Jan-2017	19-Jan-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	12	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	14	7.14	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	9	22.22	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	12	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	14.29	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✔	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	6	33.33	10.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 15, 2017 3:23 PM**
Eurofins | mgt reference: **534351**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **534351-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 15, 2017

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M17-Fe15274	M17-Fe15275	M17-Fe15276	M17-Fe15277
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	< 10	15	13
Ammonia (as N)	0.01	mg/L	0.02	0.03	0.14	0.05
Chloride	1	mg/L	42	31	27	19
Conductivity (at 25°C)	1	uS/cm	540	360	390	190
Nitrate & Nitrite (as N)	0.05	mg/L	15	3.1	2.0	0.81
Nitrate (as N)	0.02	mg/L	15	3.1	2.0	0.79
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	0.03
Organic Nitrogen (as N)	0.2	mg/L	1.7	0.7	1.0	< 0.2
pH	0.1	pH Units	7.2	7.2	6.6	6.7
Phosphate total (as P)	0.05	mg/L	0.18	0.11	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	30	16	30	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 390	240	^{Q19} 280	130
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.7	0.7	1.1	< 0.2
Total Nitrogen (as N)	0.2	mg/L	17	3.8	3.1	0.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	100	110	55
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	100	110	55
Heavy Metals						
Aluminium	0.05	mg/L	1.1	0.35	0.30	0.12
Aluminium (filtered)	0.05	mg/L	1.1	0.11	0.24	0.11
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.010	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.33	0.40	< 0.05	0.16
Iron (filtered)	0.05	mg/L	0.21	0.08	< 0.05	0.14
Lead	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			M17-Fe15274	M17-Fe15275	M17-Fe15276	M17-Fe15277
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.012	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.019	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	56	43	45	22
Magnesium	0.5	mg/L	5.3	3.0	5.8	1.4
Potassium	0.5	mg/L	16	1.4	2.3	< 0.5
Sodium	0.5	mg/L	17	18	13	10

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M17-Fe15278	M17-Fe15279	M17-Fe15280	M17-Fe15281
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	24	21	18	< 10
Ammonia (as N)	0.01	mg/L	0.02	0.08	0.06	0.03
Chloride	1	mg/L	81	190	18	15
Conductivity (at 25°C)	1	uS/cm	360	1100	200	150
Nitrate & Nitrite (as N)	0.05	mg/L	0.40	5.8	7.5	5.5
Nitrate (as N)	0.02	mg/L	0.40	5.7	7.4	5.5
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	1.6	1.1	0.9
pH	0.1	pH Units	5.4	6.6	5.1	5.9
Phosphate total (as P)	0.05	mg/L	0.16	< 0.05	< 0.05	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	< 5	120	33	8.9
Total Dissolved Solids	10	mg/L	360	600	110	88
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	1.7	1.2	0.9
Total Nitrogen (as N)	0.2	mg/L	1.4	7.5	8.7	6.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	92	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	92	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.1	1.6	1.1	0.43
Aluminium (filtered)	0.05	mg/L	1.1	1.6	1.1	0.38
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			M17-Fe15278	M17-Fe15279	M17-Fe15280	M17-Fe15281
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.007	0.003	< 0.001	0.002
Copper (filtered)	0.001	mg/L	0.006	0.002	< 0.001	0.001
Iron	0.05	mg/L	0.32	0.25	2.8	0.06
Iron (filtered)	0.05	mg/L	0.29	0.24	2.8	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	0.013	0.012	0.010
Zinc (filtered)	0.005	mg/L	0.009	0.005	0.005	0.008
Alkali Metals						
Calcium	0.5	mg/L	9.1	58	16	9.7
Magnesium	0.5	mg/L	5.8	15	3.4	1.3
Potassium	0.5	mg/L	9.6	28	1.7	0.8
Sodium	0.5	mg/L	36	97	5.6	9.8

Client Sample ID			MW9 Water	MW10 Water	MW55 Water	SWL1_1 Water
Sample Matrix			M17-Fe15282	M17-Fe15283	M17-Fe15284	M17-Fe15285
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	G01 < 0.08	-
TRH C10-C14	0.05	mg/L	-	-	< 0.05	-
TRH C15-C28	0.1	mg/L	-	-	< 0.1	-
TRH C29-C36	0.1	mg/L	-	-	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	-	-	< 0.1	-
BTEX						
Comments					G01	
Benzene	0.001	mg/L	-	-	< 0.004	-
Toluene	0.001	mg/L	-	-	< 0.004	-
Ethylbenzene	0.001	mg/L	-	-	< 0.004	-
m&p-Xylenes	0.002	mg/L	-	-	< 0.008	-
o-Xylene	0.001	mg/L	-	-	< 0.004	-
Xylenes - Total	0.003	mg/L	-	-	< 0.012	-
4-Bromofluorobenzene (surr.)	1	%	-	-	79	-

Client Sample ID			MW9 Water	MW10 Water	MW55 Water	SWL1_1 Water
Sample Matrix			M17-Fe15282	M17-Fe15283	M17-Fe15284	M17-Fe15285
Eurofins mgt Sample No.			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	^{G01} < 0.04	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	< 0.05	-
TRH C6-C10	0.02	mg/L	-	-	^{G01} < 0.08	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	^{G01} < 0.08	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	< 0.05	-
TRH >C16-C34	0.1	mg/L	-	-	< 0.1	-
TRH >C34-C40	0.1	mg/L	-	-	< 0.1	-
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	13	< 10	40	< 10
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	0.11	0.03	0.03	0.05
Chloride						
Chloride	1	mg/L	15	18	78	49
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	120	260	930	270
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	0.36	4.7	4.1	0.16
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	0.34	4.7	3.9	0.14
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.15	< 0.02
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.4	1.3	< 0.2
pH						
pH	0.1	pH Units	5.2	7.1	7.0	7.0
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)						
Sulphate (as SO4)	5	mg/L	19	15	190	32
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	73	^{Q19} 190	610	130
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.4	1.3	< 0.2
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	0.9	6.1	5.4	< 0.2
Turbidity						
Turbidity	1	NTU	-	-	-	1.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	60	140	37
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	60	140	37
Heavy Metals						
Aluminium	0.05	mg/L	0.75	0.53	0.32	0.05
Aluminium (filtered)	0.05	mg/L	0.51	0.47	0.24	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	0.004	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.001	0.001
Iron	0.05	mg/L	3.3	3.1	0.08	0.17
Iron (filtered)	0.05	mg/L	1.5	4.8	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			MW9	MW10	MW55	SWL1_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15282	M17-Fe15283	M17-Fe15284	M17-Fe15285
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.016	< 0.005	0.031
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.019
Alkali Metals						
Calcium	0.5	mg/L	4.7	27	63	10
Magnesium	0.5	mg/L	1.4	2.5	14	4.8
Potassium	0.5	mg/L	0.8	3.3	20	2.5
Sodium	0.5	mg/L	9.1	12	75	22
Pathogens						
E.coli	1	MPN/100mL	-	-	-	110
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	>2400

Client Sample ID			SWL1_2	SWL1_3	SWL2_1	SWL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15286	M17-Fe15287	M17-Fe15288	M17-Fe15289
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)						
Ammonia (as N)	0.01	mg/L	0.02	0.01	0.02	0.02
Chloride						
Chloride	1	mg/L	41	25	69	66
Conductivity (at 25°C)						
Conductivity (at 25°C)	1	uS/cm	240	160	410	410
Nitrate & Nitrite (as N)						
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)						
Nitrate (as N)	0.02	mg/L	0.05	< 0.02	< 0.02	< 0.02
Nitrite (as N)						
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)						
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	< 0.2
pH						
pH	0.1	pH Units	6.9	6.9	7.6	7.6
Phosphate total (as P)						
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)						
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO₄)						
Sulphate (as SO ₄)	5	mg/L	20	11	38	40
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	120	83	220	220
Total Kjeldahl Nitrogen (as N)						
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	< 0.2
Total Nitrogen (as N)						
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	< 0.2
Turbidity						
Turbidity	1	NTU	1.5	1.2	1.3	1.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	33	25	50	49
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	33	25	50	49
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	0.16	0.15
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.11	0.11
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			SWL1_2	SWL1_3	SWL2_1	SWL2_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15286	M17-Fe15287	M17-Fe15288	M17-Fe15289
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.18	0.14	0.12	0.11
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.07	0.07
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.040	0.012	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.028	0.031	0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.021	0.026	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	10	7.1	13	13
Magnesium	0.5	mg/L	4.3	2.7	9.6	9.6
Potassium	0.5	mg/L	2.3	1.8	2.8	3.0
Sodium	0.5	mg/L	20	13	37	37
Pathogens						
E.coli	1	MPN/100mL	52	100	60	50
Thermotolerant Coliforms	1	MPN/100mL	2400	1100	580	460

Client Sample ID			SWL2_3	SWL3_1	SWL3_2	SWL3_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15290	M17-Fe15291	M17-Fe15292	M17-Fe15293
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.02	0.03	0.03	0.03
Chloride	1	mg/L	75	62	62	62
Conductivity (at 25°C)	1	uS/cm	410	410	400	410
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.3	0.2
pH	0.1	pH Units	7.6	7.8	7.9	7.8
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	41	25	24	25
Total Dissolved Solids	10	mg/L	210	230	220	230
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.3	0.2

Client Sample ID			SWL2_3	SWL3_1	SWL3_2	SWL3_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15290	M17-Fe15291	M17-Fe15292	M17-Fe15293
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Total Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.3	0.2
Turbidity	1	NTU	1.0	1.7	1.8	2.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	49	71	74	73
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	49	71	74	73
Heavy Metals						
Aluminium	0.05	mg/L	0.16	0.30	0.30	0.28
Aluminium (filtered)	0.05	mg/L	0.11	0.22	0.22	0.22
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.17	0.17	0.16
Iron (filtered)	0.05	mg/L	0.07	0.12	0.12	0.12
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.011	0.009	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	17	17	17
Magnesium	0.5	mg/L	9.6	8.2	8.1	8.2
Potassium	0.5	mg/L	2.9	1.9	2.0	1.9
Sodium	0.5	mg/L	36	36	37	37
Pathogens						
E.coli	1	MPN/100mL	77	110	120	72
Thermotolerant Coliforms	1	MPN/100mL	2000	250	440	330

Client Sample ID			SWL4_1	SWL4_2	SWL4_3	QC301
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15294	M17-Fe15295	M17-Fe15296	M17-Fe15297
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.14	0.08	0.04	0.03
Chloride	1	mg/L	140	140	140	41
Conductivity (at 25°C)	1	uS/cm	650	670	660	260
Nitrate & Nitrite (as N)	0.05	mg/L	0.12	< 0.05	< 0.05	0.16
Nitrate (as N)	0.02	mg/L	0.11	0.02	< 0.02	0.14
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	4.3	0.3
pH	0.1	pH Units	6.5	6.6	6.7	7.0
Phosphate total (as P)	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	73	74	72	23
Total Dissolved Solids	10	mg/L	400	390	380	140
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.5	4.3	0.3
Total Nitrogen (as N)	0.2	mg/L	0.7	0.5	4.3	0.5
Turbidity	1	NTU	53	8.5	10	1.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	22	33
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	22	22	33
Heavy Metals						
Aluminium	0.05	mg/L	0.30	0.17	0.24	0.06
Aluminium (filtered)	0.05	mg/L	0.30	0.16	0.17	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.001	0.002
Copper (filtered)	0.001	mg/L	0.004	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	4.0	1.4	3.2	0.20
Iron (filtered)	0.05	mg/L	4.0	1.2	1.8	< 0.05
Lead	0.001	mg/L	0.001	< 0.001	0.001	0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	0.016	0.018	0.010
Manganese (filtered)	0.005	mg/L	0.016	0.016	0.018	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.015	0.013	0.011	0.033
Zinc (filtered)	0.005	mg/L	0.015	0.008	0.008	0.022

Client Sample ID			SWL4_1	SWL4_2	SWL4_3	QC301
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15294	M17-Fe15295	M17-Fe15296	M17-Fe15297
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	19	19	19	10
Magnesium	0.5	mg/L	12	12	12	4.9
Potassium	0.5	mg/L	5.6	5.7	4.8	2.5
Sodium	0.5	mg/L	65	66	65	22
Pathogens						
E.coli	1	MPN/100mL	30	15	20	120
Thermotolerant Coliforms	1	MPN/100mL	5500	>2400	13000	2000

Client Sample ID			QC303	QC305	QC306
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15298	M17-Fe15299	M17-Fe15300
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit			
Acidity (as CaCO ₃)	10	mg/L	12	-	-
Ammonia (as N)	0.01	mg/L	0.12	-	-
Chloride	1	mg/L	130	-	-
Conductivity (at 25°C)	1	uS/cm	680	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	-	-
Nitrate (as N)	0.02	mg/L	0.05	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	1.1	-	-
pH	0.1	pH Units	6.4	-	-
Phosphate total (as P)	0.05	mg/L	0.08	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as SO ₄)	5	mg/L	75	-	-
Total Dissolved Solids	10	mg/L	390	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	-	-
Total Nitrogen (as N)	0.2	mg/L	1.3	-	-
Turbidity	1	NTU	26	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	20	-	-
Heavy Metals					
Aluminium	0.05	mg/L	0.26	-	-
Aluminium (filtered)	0.05	mg/L	0.44	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	-	-
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	-	-
Copper (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001
Iron	0.05	mg/L	2.9	-	-
Iron (filtered)	0.05	mg/L	2.9	< 0.05	< 0.05

Client Sample ID			QC303	QC305	QC306
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Fe15298	M17-Fe15299	M17-Fe15300
Date Sampled			Feb 15, 2017	Feb 15, 2017	Feb 15, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Lead	0.001	mg/L	0.001	-	-
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001
Manganese	0.005	mg/L	0.015	-	-
Manganese (filtered)	0.005	mg/L	0.015	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.021	-	-
Zinc (filtered)	0.005	mg/L	0.021	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	20	-	-
Magnesium	0.5	mg/L	12	-	-
Potassium	0.5	mg/L	5.1	-	-
Sodium	0.5	mg/L	67	-	-
Pathogens					
E.coli	1	MPN/100mL	10	-	-
Thermotolerant Coliforms	1	MPN/100mL	6500	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Feb 20, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 16, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 16, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Feb 20, 2017	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 16, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Feb 16, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 16, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 16, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 16, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Feb 16, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 16, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Feb 16, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 17, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 16, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 17, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 17, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Feb 17, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 17, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 16, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 16, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 16, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 16, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 16, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 16, 2017	2 Day

Description

Organic Nitrogen (as N)

- Method: APHA 4500 Organic Nitrogen (N)

Total Kjeldahl Nitrogen (as N)

- Method: APHA 4500 TKN

Testing Site

Melbourne

Melbourne

Extracted

Feb 16, 2017

Feb 16, 2017

Holding Time

7 Day

7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	110			70-130	Pass	
TRH C10-C14	%	93			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	95			70-130	Pass	
Toluene	%	89			70-130	Pass	
Ethylbenzene	%	89			70-130	Pass	
m&p-Xylenes	%	86			70-130	Pass	
Xylenes - Total	%	85			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	74			70-130	Pass	
TRH C6-C10	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	102			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	103			70-130	Pass	
Ammonia (as N)	%	91			70-130	Pass	
Chloride	%	105			70-130	Pass	
Nitrate & Nitrite (as N)	%	91			70-130	Pass	
Nitrate (as N)	%	91			70-130	Pass	
Nitrite (as N)	%	97			70-130	Pass	
Phosphate total (as P)	%	100			70-130	Pass	
Phosphorus reactive (as P)	%	119			70-130	Pass	
Sulphate (as SO4)	%	115			70-130	Pass	
Total Dissolved Solids	%	91			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	99			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Carbonate Alkalinity (as CaCO ₃)	%	104			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	108			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	86			70-130	Pass		
Arsenic	%	86			70-130	Pass		
Cadmium	%	83			70-130	Pass		
Chromium	%	88			70-130	Pass		
Copper	%	87			70-130	Pass		
Iron	%	93			70-130	Pass		
Lead	%	84			70-130	Pass		
Manganese	%	86			70-130	Pass		
Mercury	%	97			70-130	Pass		
Nickel	%	87			70-130	Pass		
Selenium	%	85			70-130	Pass		
Zinc	%	82			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	89			70-130	Pass		
Magnesium	%	97			70-130	Pass		
Potassium	%	87			70-130	Pass		
Sodium	%	88			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M17-Fe16607	NCP	%	121		70-130	Pass	
Phosphate total (as P)	M17-Fe13652	NCP	%	116		70-130	Pass	
Phosphorus reactive (as P)	M17-Fe15274	CP	%	119		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B17-Fe14150	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe15501	NCP	%	118		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe15501	NCP	%	118		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M17-Fe15274	CP	%	95		70-130	Pass	
Magnesium	M17-Fe15274	CP	%	94		70-130	Pass	
Potassium	M17-Fe15274	CP	%	91		70-130	Pass	
Sodium	M17-Fe15274	CP	%	88		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15275	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15275	CP	%	80		70-130	Pass	
Nitrate (as N)	M17-Fe15275	CP	%	79		70-130	Pass	
Nitrite (as N)	M17-Fe15275	CP	%	96		70-130	Pass	
Phosphorus reactive (as P)	M17-Fe15275	CP	%	102		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15276	CP	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15276	CP	%	84		70-130	Pass	
Nitrate (as N)	M17-Fe15276	CP	%	84		70-130	Pass	
Nitrite (as N)	M17-Fe15276	CP	%	96		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	M17-Fe14299	NCP	%	124		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M17-Fe14299	NCP	%	115		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M17-Fe15284	CP	%	94		70-130	Pass	
Magnesium	M17-Fe15284	CP	%	93		70-130	Pass	
Potassium	M17-Fe15284	CP	%	89		70-130	Pass	
Sodium	M17-Fe15284	CP	%	90		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15285	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15285	CP	%	90		70-130	Pass	
Nitrate (as N)	M17-Fe15285	CP	%	90		70-130	Pass	
Nitrite (as N)	M17-Fe15285	CP	%	98		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M17-Fe15047	NCP	%	72		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15286	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15286	CP	%	90		70-130	Pass	
Nitrate (as N)	M17-Fe15286	CP	%	89		70-130	Pass	
Nitrite (as N)	M17-Fe15286	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as SO ₄)	M17-Fe15289	CP	%	106		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M17-Fe15292	CP	%	93		70-130	Pass	
Arsenic	M17-Fe15292	CP	%	88		70-130	Pass	
Cadmium	M17-Fe15292	CP	%	83		70-130	Pass	
Chromium	M17-Fe15292	CP	%	91		70-130	Pass	
Copper	M17-Fe15292	CP	%	86		70-130	Pass	
Iron	M17-Fe15292	CP	%	93		70-130	Pass	
Lead	M17-Fe15292	CP	%	85		70-130	Pass	
Manganese	M17-Fe15292	CP	%	87		70-130	Pass	
Mercury	M17-Fe15292	CP	%	104		70-130	Pass	
Nickel	M17-Fe15292	CP	%	89		70-130	Pass	
Selenium	M17-Fe15292	CP	%	86		70-130	Pass	
Zinc	M17-Fe15292	CP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M17-Fe15293	CP	%	90		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M17-Fe15294	CP	%	89		70-130	Pass	
Magnesium	M17-Fe15294	CP	%	91		70-130	Pass	
Potassium	M17-Fe15294	CP	%	86		70-130	Pass	
Sodium	M17-Fe15294	CP	%	89		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15295	CP	%	92		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nitrate & Nitrite (as N)	M17-Fe15295	CP	%	91			70-130	Pass	
Nitrate (as N)	M17-Fe15295	CP	%	91			70-130	Pass	
Nitrite (as N)	M17-Fe15295	CP	%	98			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Fe15296	CP	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15296	CP	%	91			70-130	Pass	
Nitrate (as N)	M17-Fe15296	CP	%	91			70-130	Pass	
Nitrite (as N)	M17-Fe15296	CP	%	100			70-130	Pass	
Phosphate total (as P)	M17-Fe15296	CP	%	124			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M17-Fe15274	CP	mg/L	< 0.05	0.06	28	30%	Pass	
Total Dissolved Solids	M17-Fe16412	NCP	mg/L	2000	2100	2.0	30%	Pass	
Duplicate									
Alkali Metals									
				Result 1	Result 2	RPD			
Calcium	M17-Fe15274	CP	mg/L	56	56	1.0	30%	Pass	
Magnesium	M17-Fe15274	CP	mg/L	5.3	5.3	1.0	30%	Pass	
Potassium	M17-Fe15274	CP	mg/L	16	16	1.0	30%	Pass	
Sodium	M17-Fe15274	CP	mg/L	17	17	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Fe15275	CP	mg/L	0.03	0.03	1.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Fe15275	CP	mg/L	3.1	3.1	<1	30%	Pass	
Nitrate (as N)	M17-Fe15275	CP	mg/L	3.1	3.1	<1	30%	Pass	
Nitrite (as N)	M17-Fe15275	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	M17-Fe15275	CP	mg/L	0.11	0.10	13	30%	Pass	
Phosphorus reactive (as P)	M17-Fe15275	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Fe15276	CP	mg/L	0.14	0.12	11	30%	Pass	
Nitrate & Nitrite (as N)	M17-Fe15276	CP	mg/L	2.0	2.1	2.0	30%	Pass	
Nitrate (as N)	M17-Fe15276	CP	mg/L	2.0	2.0	2.0	30%	Pass	
Nitrite (as N)	M17-Fe15276	CP	mg/L	0.03	0.03	2.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M17-Fe15279	CP	mg/L	1.6	1.7	3.0	30%	Pass	
Arsenic	M17-Fe15279	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Fe15279	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Fe15279	CP	mg/L	0.001	0.001	2.0	30%	Pass	
Copper	M17-Fe15279	CP	mg/L	0.003	0.003	1.0	30%	Pass	
Iron	M17-Fe15279	CP	mg/L	0.25	0.27	10	30%	Pass	
Lead	M17-Fe15279	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Fe15279	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Fe15279	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Fe15279	CP	mg/L	0.001	0.001	3.0	30%	Pass	
Selenium	M17-Fe15279	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Fe15279	CP	mg/L	0.013	0.012	4.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Fe15280	CP	mg/L	1.1	1.1	4.0	30%	Pass
Arsenic	M17-Fe15280	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M17-Fe15280	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M17-Fe15280	CP	mg/L	0.002	0.002	1.0	30%	Pass
Copper	M17-Fe15280	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M17-Fe15280	CP	mg/L	2.8	2.8	2.0	30%	Pass
Lead	M17-Fe15280	CP	mg/L	0.001	0.002	38	30%	Fail Q15
Manganese	M17-Fe15280	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Fe15280	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe15280	CP	mg/L	0.001	0.001	8.0	30%	Pass
Selenium	M17-Fe15280	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Fe15280	CP	mg/L	0.012	0.008	41	30%	Fail Q15
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	M17-Fe17021	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M17-Fe17021	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M17-Fe17021	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M17-Fe17021	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M17-Fe17021	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M17-Fe17021	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe15284	CP	mg/L	63	62	2.0	30%	Pass
Magnesium	M17-Fe15284	CP	mg/L	14	14	<1	30%	Pass
Potassium	M17-Fe15284	CP	mg/L	20	20	<1	30%	Pass
Sodium	M17-Fe15284	CP	mg/L	75	76	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Fe15285	CP	mg/L	0.05	0.05	7.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Fe15285	CP	mg/L	0.16	0.17	7.0	30%	Pass
Nitrate (as N)	M17-Fe15285	CP	mg/L	0.14	0.16	10	30%	Pass
Nitrite (as N)	M17-Fe15285	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phosphate total (as P)	M17-Fe15285	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Fe15285	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Fe15286	CP	mg/L	0.02	0.02	11	30%	Pass
Nitrate & Nitrite (as N)	M17-Fe15286	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Fe15286	CP	mg/L	0.05	0.05	2.0	30%	Pass
Nitrite (as N)	M17-Fe15286	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe15288	CP	mg/L	69	63	9.0	30%	Pass
Sulphate (as SO4)	M17-Fe15288	CP	mg/L	38	39	2.3	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Fe15289	CP	NTU	1.2	1.1	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe15291	CP	uS/cm	410	410	1.0	30%	Pass
pH	M17-Fe15291	CP	pH Units	7.8	7.8	pass	30%	Pass

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe15291	CP	mg/L	71	72	2.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Fe15291	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe15291	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe15291	CP	mg/L	71	72	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Fe15291	CP	mg/L	0.30	0.29	2.0	30%	Pass	
Arsenic	M17-Fe15291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Fe15291	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Fe15291	CP	mg/L	0.001	0.001	1.0	30%	Pass	
Copper	M17-Fe15291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Fe15291	CP	mg/L	0.17	0.17	2.0	30%	Pass	
Lead	M17-Fe15291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Fe15291	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Fe15291	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Fe15291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M17-Fe15291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Fe15291	CP	mg/L	0.011	< 0.005	110	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M17-Fe15292	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Fe15294	CP	mg/L	< 10	13	55	30%	Fail	Q15
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Fe15294	CP	mg/L	19	19	3.0	30%	Pass	
Magnesium	M17-Fe15294	CP	mg/L	12	12	1.0	30%	Pass	
Potassium	M17-Fe15294	CP	mg/L	5.6	5.9	6.0	30%	Pass	
Sodium	M17-Fe15294	CP	mg/L	65	63	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Fe15295	CP	mg/L	0.08	0.08	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Fe15295	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Fe15295	CP	mg/L	0.02	0.03	11	30%	Pass	
Nitrite (as N)	M17-Fe15295	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	M17-Fe15295	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Fe15295	CP	mg/L	0.5	0.6	16	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Fe15296	CP	mg/L	0.04	0.05	20	30%	Pass	
Nitrate & Nitrite (as N)	M17-Fe15296	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Fe15296	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Fe15296	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 16, 2017 3:09 PM**
Eurofins | mgt reference: **534540**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **534540-W**
 Project name NL_BASELINE GW_SW MONITORING
 Project ID ENAUPERT04483AA
 Received Date Feb 16, 2017

Client Sample ID			MW34 Water	MW36 Water	MW37 Water	MW38 Water
Sample Matrix			M17-Fe16776	M17-Fe16777	M17-Fe16778	M17-Fe16779
Eurofins mgt Sample No.			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	52	< 10	14	35
Ammonia (as N)	0.01	mg/L	0.04	0.03	0.28	0.49
Chloride	1	mg/L	63	18	22	180
Conductivity (at 25°C)	1	uS/cm	360	99	100	770
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.7	1.1	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	2.6	1.0	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	5.1	0.45	0.72	1.7
pH	0.1	pH Units	6.1	6.6	5.7	6.8
Phosphate total (as P)	0.05	mg/L	2.3	0.09	0.24	1.1
Phosphorus reactive (as P)	0.05	mg/L	1.4	0.09	0.17	0.75
Sulphate (as SO ₄)	5	mg/L	33	< 5	5.9	50
Total Dissolved Solids	10	mg/L	^{Q19} 510	^{Q19} 120	^{Q19} 110	530
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.1	0.5	1.0	2.2
Total Nitrogen (as N)	0.2	mg/L	5.1	3.2	2.2	2.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	40	< 20	< 20	49
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	40	< 20	< 20	49
Heavy Metals						
Aluminium	0.05	mg/L	5.8	0.15	0.17	1.9
Aluminium (filtered)	0.05	mg/L	4.3	0.06	0.15	0.75
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.7	< 0.05	0.08	1.6
Iron (filtered)	0.05	mg/L	1.5	< 0.05	0.06	0.88
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.001

Client Sample ID			MW34 Water	MW36 Water	MW37 Water	MW38 Water
Sample Matrix			M17-Fe16776	M17-Fe16777	M17-Fe16778	M17-Fe16779
Eurofins mgt Sample No.			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.031
Zinc	0.005	mg/L	0.013	0.008	0.12	0.43
Zinc (filtered)	0.005	mg/L	0.013	< 0.005	< 0.005	0.45
Alkali Metals						
Calcium	0.5	mg/L	12	9.0	3.5	26
Magnesium	0.5	mg/L	11	1.5	2.0	14
Potassium	0.5	mg/L	5.2	< 0.5	0.9	14
Sodium	0.5	mg/L	32	6.7	8.8	88

Client Sample ID			MW39 Water	MW45 Water	MW46 Water	MW47 Water
Sample Matrix			M17-Fe16780	M17-Fe16781	M17-Fe16782	M17-Fe16783
Eurofins mgt Sample No.			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	13	< 10	14	< 10
Ammonia (as N)	0.01	mg/L	0.49	0.20	0.44	0.22
Chloride	1	mg/L	210	480	730	570
Conductivity (at 25°C)	1	uS/cm	1100	1700	3100	2600
Nitrate & Nitrite (as N)	0.05	mg/L	2.5	< 0.05	< 0.05	2.7
Nitrate (as N)	0.02	mg/L	2.4	< 0.02	< 0.02	2.1
Nitrite (as N)	0.02	mg/L	0.13	< 0.02	< 0.02	0.59
Organic Nitrogen (as N)	0.2	mg/L	1.7	0.54	0.76	0.78
pH	0.1	pH Units	6.8	7.8	7.7	8.1
Phosphate total (as P)	0.05	mg/L	0.66	0.15	0.15	0.14
Phosphorus reactive (as P)	0.05	mg/L	0.32	< 0.05	< 0.05	0.09
Sulphate (as SO ₄)	5	mg/L	210	25	38	120
Total Dissolved Solids	10	mg/L	770	1000	1900	1600
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.2	0.7	1.2	1.0
Total Nitrogen (as N)	0.2	mg/L	4.7	0.74	1.2	3.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	34	230	250	290
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	34	230	250	290
Heavy Metals						
Aluminium	0.05	mg/L	0.10	1.5	0.74	1.1
Aluminium (filtered)	0.05	mg/L	0.09	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	0.003	< 0.001	0.003
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW39	MW45	MW46	MW47
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16780	M17-Fe16781	M17-Fe16782	M17-Fe16783
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.003	0.003	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.95	2.5	1.5	0.79
Iron (filtered)	0.05	mg/L	0.85	< 0.05	0.09	< 0.05
Lead	0.001	mg/L	< 0.001	0.002	0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.020	< 0.005	0.023	0.014
Manganese (filtered)	0.005	mg/L	0.019	< 0.005	0.021	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	0.004
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Zinc	0.005	mg/L	0.022	0.020	0.038	0.029
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	73	83	96	68
Magnesium	0.5	mg/L	30	32	56	37
Potassium	0.5	mg/L	26	4.1	6.0	3.9
Sodium	0.5	mg/L	76	230	380	380

Client Sample ID			SWL16_1	SWL16_2	SWL16_3	SWL15_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16784	M17-Fe16785	M17-Fe16786	M17-Fe16787
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	15	29
Ammonia (as N)	0.01	mg/L	0.06	0.04	0.04	0.02
Chloride	1	mg/L	130	120	130	110
Conductivity (at 25°C)	1	uS/cm	470	520	490	350
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.04	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	6.8	9.5	3.3	6
pH	0.1	pH Units	7.3	7.3	7.1	4.8
Phosphate total (as P)	0.05	mg/L	1.1	1.0	0.96	0.23
Phosphorus reactive (as P)	0.05	mg/L	0.81	0.92	0.74	0.13
Sulphate (as SO4)	5	mg/L	22	19	21	6.4
Total Dissolved Solids	10	mg/L	^{Q19} 400	^{Q19} 390	^{Q19} 390	^{Q19} 360
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	6.9	9.5	3.3	6.0
Total Nitrogen (as N)	0.2	mg/L	6.9	9.5	3.3	6
Turbidity	1	NTU	90	14	37	7.4

Client Sample ID			SWL16_1	SWL16_2	SWL16_3	SWL15_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16784	M17-Fe16785	M17-Fe16786	M17-Fe16787
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	51	51	47	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	51	51	47	< 20
Heavy Metals						
Aluminium	0.05	mg/L	3.2	0.43	0.43	0.47
Aluminium (filtered)	0.05	mg/L	0.23	0.43	0.44	0.41
Arsenic	0.001	mg/L	0.003	0.002	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	0.00032	< 0.00005	< 0.00005	0.00007
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Iron	0.05	mg/L	6.4	1.9	2.0	0.52
Iron (filtered)	0.05	mg/L	1.1	1.8	2.2	0.44
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.057	0.030	0.026	0.011
Manganese (filtered)	0.005	mg/L	0.023	0.030	0.026	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.14	0.019	0.020	0.026
Zinc (filtered)	0.005	mg/L	< 0.005	0.013	0.014	0.017
Alkali Metals						
Calcium	0.5	mg/L	19	18	18	6.9
Magnesium	0.5	mg/L	8.6	7.8	7.8	6.5
Potassium	0.5	mg/L	12	12	10	2.4
Sodium	0.5	mg/L	53	50	52	43
Pathogens						
E.coli	1	MPN/100mL	140	280	190	330
Thermotolerant Coliforms	1	MPN/100mL	8200	3700	5500	4100

Client Sample ID			SWL15_2	SWL18_1	SWL18_2	SWL18_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16788	M17-Fe16789	M17-Fe16790	M17-Fe16791
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	31	11	12	10
Ammonia (as N)	0.01	mg/L	< 0.01	0.22	0.23	0.24
Chloride	1	mg/L	100	660	710	690
Conductivity (at 25°C)	1	uS/cm	390	2600	2300	2600
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.2	2.8	2.5	3.5
pH	0.1	pH Units	4.7	7.1	7.3	7.2
Phosphate total (as P)	0.05	mg/L	0.15	0.63	0.63	0.79
Phosphorus reactive (as P)	0.05	mg/L	0.12	0.55	0.56	0.56
Sulphate (as SO ₄)	5	mg/L	7.9	84	85	77
Total Dissolved Solids	10	mg/L	^{Q19} 370	1700	1700	1700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.2	3.0	2.7	3.7
Total Nitrogen (as N)	0.2	mg/L	3.2	3	2.7	3.7
Turbidity	1	NTU	12	21	22	25
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	52	55	57
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	52	55	57
Heavy Metals						
Aluminium	0.05	mg/L	0.47	0.22	0.24	0.23
Aluminium (filtered)	0.05	mg/L	0.41	0.18	0.19	0.19
Arsenic	0.001	mg/L	< 0.001	0.003	0.003	0.003
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.002
Cadmium	0.00005	mg/L	0.00007	< 0.00005	0.00010	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Copper	0.001	mg/L	< 0.001	0.002	0.002	0.002
Copper (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.002
Iron	0.05	mg/L	0.51	4.5	4.6	4.7
Iron (filtered)	0.05	mg/L	0.41	3.0	3.1	3.1
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.010	0.20	0.21	0.19
Manganese (filtered)	0.005	mg/L	0.010	0.18	0.19	0.18
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.005	0.006	0.006
Nickel (filtered)	0.001	mg/L	< 0.001	0.005	0.005	0.005
Selenium	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.031	0.016	0.015	0.015
Zinc (filtered)	0.005	mg/L	0.016	0.007	0.008	0.007

Client Sample ID			SWL15_2	SWL18_1	SWL18_2	SWL18_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16788	M17-Fe16789	M17-Fe16790	M17-Fe16791
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	6.4	28	28	28
Magnesium	0.5	mg/L	6.4	53	52	53
Potassium	0.5	mg/L	2.1	13	13	13
Sodium	0.5	mg/L	42	300	290	300
Pathogens						
E.coli	1	MPN/100mL	5800	150	74	41
Thermotolerant Coliforms	1	MPN/100mL	5800	1100	1300	2000

Client Sample ID			SWL22_1	SWL22_2	SWL22_3	QC307
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16792	M17-Fe16793	M17-Fe16794	M17-Fe16795
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.23	0.23	0.23	0.05
Chloride	1	mg/L	690	730	760	120
Conductivity (at 25°C)	1	uS/cm	2300	2500	2700	520
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	3.7	3.9	3.27	6.1
pH	0.1	pH Units	7.1	7.2	7.2	7.1
Phosphate total (as P)	0.05	mg/L	0.75	0.81	1.5	1.1
Phosphorus reactive (as P)	0.05	mg/L	0.55	0.53	0.53	0.66
Sulphate (as SO ₄)	5	mg/L	86	87	82	20
Total Dissolved Solids	10	mg/L	1700	1700	1700	⁰¹⁹ 390
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	3.9	4.1	3.5	6.2
Total Nitrogen (as N)	0.2	mg/L	3.9	4.1	3.5	6.2
Turbidity	1	NTU	25	24	24	120
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	54	54	57	49
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	54	54	57	49
Heavy Metals						
Aluminium	0.05	mg/L	0.23	0.21	0.22	0.48
Aluminium (filtered)	0.05	mg/L	0.18	0.18	0.18	0.45
Arsenic	0.001	mg/L	0.003	0.003	0.003	0.002
Arsenic (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Cadmium	0.00005	mg/L	0.00005	< 0.00005	0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.002	0.001
Chromium (filtered)	0.001	mg/L	0.001	0.001	0.001	0.001
Copper	0.001	mg/L	0.002	0.002	0.002	0.002
Copper (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Iron	0.05	mg/L	4.8	4.5	4.9	2.3
Iron (filtered)	0.05	mg/L	3.0	3.0	3.0	1.9

Client Sample ID			SWL22_1	SWL22_2	SWL22_3	QC307
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe16792	M17-Fe16793	M17-Fe16794	M17-Fe16795
Date Sampled			Feb 16, 2017	Feb 16, 2017	Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.22	0.21	0.23	0.027
Manganese (filtered)	0.005	mg/L	0.20	0.19	0.20	0.025
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	0.005	0.005	< 0.001
Nickel (filtered)	0.001	mg/L	0.005	0.005	0.005	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.015	0.015	0.016	0.022
Zinc (filtered)	0.005	mg/L	0.007	0.006	0.007	0.010
Alkali Metals						
Calcium	0.5	mg/L	28	28	28	18
Magnesium	0.5	mg/L	53	52	53	7.6
Potassium	0.5	mg/L	14	14	13	11
Sodium	0.5	mg/L	300	300	300	50
Pathogens						
E.coli	1	MPN/100mL	20	M ¹⁵ <10	10	190
Thermotolerant Coliforms	1	MPN/100mL	2600	3100	3100	2900

Client Sample ID			QC312	QC313
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M17-Fe16796	M17-Fe16797
Date Sampled			Feb 16, 2017	Feb 16, 2017
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 17, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Feb 17, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 17, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 17, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 17, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 17, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 17, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Feb 17, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 20, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 17, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 20, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 20, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Feb 20, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 20, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 17, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 17, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 17, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 17, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 17, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 17, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 17, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 17, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 16, 2017 3:09 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 534540	Due: Feb 23, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)							
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X		X		X												X	X	X						X	X			X	X	X							
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X									
Brisbane Laboratory - NATA Site # 20794																																																		
Perth Laboratory - NATA Site # 18217																																																		
External Laboratory																																																		
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																													
1	MW34	Feb 16, 2017		Water	M17-Fe16776	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW36	Feb 16, 2017		Water	M17-Fe16777	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW37	Feb 16, 2017		Water	M17-Fe16778	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW38	Feb 16, 2017		Water	M17-Fe16779	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW39	Feb 16, 2017		Water	M17-Fe16780	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW45	Feb 16, 2017		Water	M17-Fe16781	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW46	Feb 16, 2017		Water	M17-Fe16782	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW47	Feb 16, 2017		Water	M17-Fe16783	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	SWL16_1	Feb 16, 2017		Water	M17-Fe16784	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Feb 16, 2017 3:09 PM
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Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury
Eurofins mgt Analytical Services Manager : Natalie Krasselt					

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X												X	X	X						X	X			X	X	X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X	X					
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	SWL16_2	Feb 16, 2017		Water	M17-Fe16785	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	SWL16_3	Feb 16, 2017		Water	M17-Fe16786	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL15_1	Feb 16, 2017		Water	M17-Fe16787	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	SWL15_2	Feb 16, 2017		Water	M17-Fe16788	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	SWL18_1	Feb 16, 2017		Water	M17-Fe16789	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL18_2	Feb 16, 2017		Water	M17-Fe16790	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL18_3	Feb 16, 2017		Water	M17-Fe16791	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL22_1	Feb 16, 2017		Water	M17-Fe16792	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL22_2	Feb 16, 2017		Water	M17-Fe16793	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	SWL22_3	Feb 16, 2017		Water	M17-Fe16794	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	QC307	Feb 16, 2017		Water	M17-Fe16795	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	QC312	Feb 16, 2017		Water	M17-Fe16796			X			X			X		X				X			X		X		X																	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	104			70-130	Pass		
Ammonia (as N)	%	92			70-130	Pass		
Chloride	%	116			70-130	Pass		
Nitrate & Nitrite (as N)	%	91			70-130	Pass		
Nitrate (as N)	%	91			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Phosphate total (as P)	%	87			70-130	Pass		
Phosphorus reactive (as P)	%	116			70-130	Pass		
Sulphate (as SO ₄)	%	117			70-130	Pass		
Total Dissolved Solids	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	93			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	112			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	115			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	89			70-130	Pass		
Arsenic	%	88			70-130	Pass		
Cadmium	%	98			70-130	Pass		
Chromium	%	84			70-130	Pass		
Copper	%	87			70-130	Pass		
Iron	%	89			70-130	Pass		
Lead	%	87			70-130	Pass		
Manganese	%	88			70-130	Pass		
Mercury	%	84			70-130	Pass		
Nickel	%	87			70-130	Pass		
Selenium	%	85			70-130	Pass		
Zinc	%	91			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	103			70-130	Pass		
Magnesium	%	110			70-130	Pass		
Potassium	%	98			70-130	Pass		
Sodium	%	100			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Fe15296	NCP	%	93		70-130	Pass	
Chloride	M17-Fe18344	NCP	%	125		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe15296	NCP	%	91		70-130	Pass	
Nitrate (as N)	M17-Fe15296	NCP	%	91		70-130	Pass	
Nitrite (as N)	M17-Fe15296	NCP	%	100		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B17-Fe16221	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	S17-Fe16202	NCP	%	92		70-130	Pass	
Total Alkalinity (as CaCO ₃)	S17-Fe16202	NCP	%	124		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Zinc	S17-Fe18929	NCP	%	90		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M17-Fe16776	CP	%	90		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Magnesium	M17-Fe16776	CP	%	90			70-130	Pass	
Potassium	M17-Fe16776	CP	%	84			70-130	Pass	
Sodium	M17-Fe16776	CP	%	86			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M17-Fe16777	CP	%	91			70-130	Pass	
Arsenic	M17-Fe16777	CP	%	90			70-130	Pass	
Cadmium	M17-Fe16777	CP	%	88			70-130	Pass	
Chromium	M17-Fe16777	CP	%	87			70-130	Pass	
Copper	M17-Fe16777	CP	%	88			70-130	Pass	
Iron	M17-Fe16777	CP	%	94			70-130	Pass	
Lead	M17-Fe16777	CP	%	87			70-130	Pass	
Manganese	M17-Fe16777	CP	%	90			70-130	Pass	
Mercury	M17-Fe16777	CP	%	85			70-130	Pass	
Nickel	M17-Fe16777	CP	%	89			70-130	Pass	
Selenium	M17-Fe16777	CP	%	87			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M17-Fe16779	CP	%	95			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO ₄)	M17-Fe16781	CP	%	91			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M17-Fe16783	CP	%	120			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Fe16784	CP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M17-Fe16785	CP	%	109			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Fe16786	CP	%	92			70-130	Pass	
Magnesium	M17-Fe16786	CP	%	92			70-130	Pass	
Potassium	M17-Fe16786	CP	%	89			70-130	Pass	
Sodium	M17-Fe16786	CP	%	90			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M17-Fe15296	NCP	mg/L	0.04	0.05	20	30%	Pass	
Conductivity (at 25°C)	M17-Fe16776	CP	uS/cm	360	320	11	30%	Pass	
Nitrate & Nitrite (as N)	M17-Fe15296	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Fe15296	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	M17-Fe15296	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M17-Fe16776	CP	pH Units	6.1	6.0	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe16776	CP	mg/L	40	43	8.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Fe16776	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe16776	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe16776	CP	mg/L	40	43	8.0	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Fe16776	CP	mg/L	5.8	7.5	26	30%	Pass
Arsenic	M17-Fe16776	CP	mg/L	0.002	0.002	13	30%	Pass
Cadmium	M17-Fe16776	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M17-Fe16776	CP	mg/L	0.004	0.006	28	30%	Pass
Copper	M17-Fe16776	CP	mg/L	0.003	0.004	17	30%	Pass
Iron	M17-Fe16776	CP	mg/L	1.7	1.8	5.0	30%	Pass
Lead	M17-Fe16776	CP	mg/L	0.002	0.002	6.0	30%	Pass
Manganese	M17-Fe16776	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Fe16776	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe16776	CP	mg/L	0.001	0.002	33	30%	Fail Q15
Selenium	M17-Fe16776	CP	mg/L	< 0.001	0.001	36	30%	Fail Q15
Zinc	M17-Fe16776	CP	mg/L	0.013	0.011	18	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe16776	CP	mg/L	12	12	1.0	30%	Pass
Magnesium	M17-Fe16776	CP	mg/L	11	11	1.0	30%	Pass
Potassium	M17-Fe16776	CP	mg/L	5.2	6.1	16	30%	Pass
Sodium	M17-Fe16776	CP	mg/L	32	32	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Fe16780	CP	mg/L	13	13	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe16781	CP	mg/L	480	490	2.4	30%	Pass
Sulphate (as SO ₄)	M17-Fe16781	CP	mg/L	25	26	1.6	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe16782	CP	mg/L	730	800	9.6	30%	Pass
Phosphate total (as P)	M17-Fe16782	CP	mg/L	0.15	0.14	6.0	30%	Pass
Sulphate (as SO ₄)	M17-Fe16782	CP	mg/L	38	38	<1	30%	Pass
Total Dissolved Solids	M17-Fe16782	CP	mg/L	1900	1900	1.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Fe16782	CP	mg/L	1.2	1.0	11	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Fe16783	CP	mg/L	0.09	0.09	1.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe16784	CP	uS/cm	470	540	13	30%	Pass
Turbidity	M17-Fe16784	CP	NTU	90	77	16	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe16784	CP	mg/L	51	53	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Fe16784	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe16784	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Fe16784	CP	mg/L	51	53	3.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe16786	CP	mg/L	18	17	2.0	30%	Pass
Magnesium	M17-Fe16786	CP	mg/L	7.8	7.7	2.0	30%	Pass
Potassium	M17-Fe16786	CP	mg/L	10	10	<1	30%	Pass
Sodium	M17-Fe16786	CP	mg/L	52	51	3.0	30%	Pass

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Fe16788	CP	mg/L	0.47	0.41	14	30%	Pass	
Arsenic	M17-Fe16788	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Fe16788	CP	mg/L	0.00007	0.00006	15	30%	Pass	
Chromium	M17-Fe16788	CP	mg/L	0.001	< 0.001	13	30%	Pass	
Copper	M17-Fe16788	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Fe16788	CP	mg/L	0.51	0.44	15	30%	Pass	
Lead	M17-Fe16788	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Fe16788	CP	mg/L	0.010	0.009	11	30%	Pass	
Mercury	M17-Fe16788	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Fe16788	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M17-Fe16788	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Fe16788	CP	mg/L	0.031	0.028	11	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Fe16790	CP	mg/L	12	< 10	46	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M17-Fe16792	CP	mg/L	0.75	0.77	3.0	30%	Pass	
Total Dissolved Solids	M17-Fe16792	CP	mg/L	1700	1700	1.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Fe16792	CP	mg/L	3.9	3.2	21	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M17-Fe16794	CP	uS/cm	2700	2500	8.0	30%	Pass	
pH	M17-Fe16794	CP	pH Units	7.2	7.3	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe16794	CP	mg/L	57	55	4.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Fe16794	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe16794	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe16794	CP	mg/L	57	55	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-Fe16795	CP	mg/L	120	140	15	30%	Pass	
Phosphorus reactive (as P)	M17-Fe16795	CP	mg/L	0.66	0.66	<1	30%	Pass	
Sulphate (as SO ₄)	M17-Fe16795	CP	mg/L	20	19	6.2	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 17, 2017 3:28 PM**
Eurofins | mgt reference: **534765**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **534765-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Feb 17, 2017

Client Sample ID			MW33 Water	MW35 Water	MW43 Water	MW44 Water
Sample Matrix			M17-Fe18989	M17-Fe18990	M17-Fe18991	M17-Fe18992
Eurofins mgt Sample No.			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	25	99	97	< 10
Ammonia (as N)	0.01	mg/L	0.33	0.08	1.1	0.53
Chloride	1	mg/L	76	33	1300	190
Conductivity (at 25°C)	1	uS/cm	350	210	4000	930
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	5.0
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	4.0
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.93
Organic Nitrogen (as N)	0.2	mg/L	0.5	4.9	4.9	5.4
pH	0.1	pH Units	7.4	3.9	6.4	7.8
Phosphate total (as P)	0.05	mg/L	< 0.05	0.26	< 0.05	1.3
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.25	< 0.05	1.3
Sulphate (as SO ₄)	5	mg/L	< 5	59	75	90
Total Dissolved Solids	10	mg/L	^{Q19} 280	^{Q19} 390	^{Q19} 3400	^{Q19} 880
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	5.0	6.0	5.9
Total Nitrogen (as N)	0.2	mg/L	0.8	5.0	6.0	11
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	78	< 20	150	180
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	78	< 20	150	180
Heavy Metals						
Aluminium	0.05	mg/L	0.35	0.58	2.4	1.6
Aluminium (filtered)	0.05	mg/L	0.28	0.56	1.7	0.95
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.005	0.028
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.031
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	0.001	0.011	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.008	0.003
Copper	0.001	mg/L	0.001	0.002	0.002	0.008
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.005
Iron	0.05	mg/L	0.14	0.18	0.50	0.68
Iron (filtered)	0.05	mg/L	0.10	0.17	0.10	0.36
Lead	0.001	mg/L	< 0.001	< 0.001	0.004	0.007
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.008

Client Sample ID			MW33 Water	MW35 Water	MW43 Water	MW44 Water
Sample Matrix			M17-Fe18989	M17-Fe18990	M17-Fe18991	M17-Fe18992
Eurofins mgt Sample No.			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.009	< 0.005	0.009	< 0.005
Manganese (filtered)	0.005	mg/L	0.009	< 0.005	0.008	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Selenium	0.001	mg/L	< 0.001	< 0.001	0.007	0.011
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.006	0.010
Zinc	0.005	mg/L	0.012	< 0.005	0.083	0.094
Zinc (filtered)	0.005	mg/L	0.010	< 0.005	0.008	0.10
Alkali Metals						
Calcium	0.5	mg/L	25	9.8	58	13
Magnesium	0.5	mg/L	5.1	3.2	98	14
Potassium	0.5	mg/L	2.7	11	7.0	7.6
Sodium	0.5	mg/L	31	16	500	140

Client Sample ID			MW29 Water	MW30 Water	MW22 Water	MW23 Water
Sample Matrix			M17-Fe18993	M17-Fe18994	M17-Fe18995	M17-Fe18996
Eurofins mgt Sample No.			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	76	16	140	23
Ammonia (as N)	0.01	mg/L	0.10	0.02	0.17	0.02
Chloride	1	mg/L	92	30	98	42
Conductivity (at 25°C)	1	uS/cm	410	190	520	340
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	3.5	< 0.05	4.9
Nitrate (as N)	0.02	mg/L	< 0.02	3.5	< 0.02	4.9
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.7	0.6	0.4	0.4
pH	0.1	pH Units	4.1	6.6	3.6	6.4
Phosphate total (as P)	0.05	mg/L	0.08	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	37	12	130	51
Total Dissolved Solids	10	mg/L	^{Q19} 420	^{Q19} 170	360	200
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	0.6	0.6	0.4
Total Nitrogen (as N)	0.2	mg/L	1.8	4.1	0.6	5.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	22
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	22
Heavy Metals						
Aluminium	0.05	mg/L	2.2	0.54	5.1	0.33
Aluminium (filtered)	0.05	mg/L	1.8	0.47	5.0	0.18
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00007	< 0.00005

Client Sample ID			MW29	MW30	MW22	MW23
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe18993	M17-Fe18994	M17-Fe18995	M17-Fe18996
Date Sampled			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00005	< 0.00005
Chromium	0.001	mg/L	0.003	< 0.001	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	0.002	0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.44	0.42	27	< 0.05
Iron (filtered)	0.05	mg/L	0.34	0.08	4.0	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.014	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.014	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.10	0.019	0.008	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	11	14	21	29
Magnesium	0.5	mg/L	15	2.7	6.9	5.2
Potassium	0.5	mg/L	2.3	0.5	1.1	6.7
Sodium	0.5	mg/L	43	24	49	32

Client Sample ID			MW24	MW25	MW26	MW27
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe18997	M17-Fe18998	M17-Fe18999	M17-Fe19000
Date Sampled			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	51	40	61	59
Ammonia (as N)	0.01	mg/L	0.13	0.07	0.10	0.12
Chloride	1	mg/L	150	69	94	29
Conductivity (at 25°C)	1	uS/cm	620	390	480	200
Nitrate & Nitrite (as N)	0.05	mg/L	2.1	6.3	1.3	< 0.05
Nitrate (as N)	0.02	mg/L	2.1	6.3	1.3	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.7	1.0	1.3	1.7
pH	0.1	pH Units	4.2	4.2	3.8	4.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	45	36	39	24
Total Dissolved Solids	10	mg/L	390	270	^{Q19} 340	^{Q19} 270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	1.1	1.4	1.8
Total Nitrogen (as N)	0.2	mg/L	2.9	7.4	2.7	1.8

Client Sample ID			MW24 Water	MW25 Water	MW26 Water	MW27 Water
Sample Matrix			M17-Fe18997	M17-Fe18998	M17-Fe18999	M17-Fe19000
Eurofins mgt Sample No.			Feb 17, 2017	Feb 17, 2017	Feb 17, 2017	Feb 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.7	1.5	1.2	1.4
Aluminium (filtered)	0.05	mg/L	1.2	0.92	1.1	1.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	< 0.001	0.003	0.002
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	0.003	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.40	0.06	0.39	1.8
Iron (filtered)	0.05	mg/L	0.26	< 0.05	0.41	1.6
Lead	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	7.3	11	3.8	1.5
Magnesium	0.5	mg/L	18	12	5.3	5.1
Potassium	0.5	mg/L	1.7	5.1	1.4	2.4
Sodium	0.5	mg/L	86	31	39	22

Client Sample ID			QC314 Water	QC315 Water
Sample Matrix			M17-Fe19001	M17-Fe19002
Eurofins mgt Sample No.			Feb 17, 2017	Feb 17, 2017
Date Sampled				
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			QC314	QC315
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M17-Fe19001	M17-Fe19002
Date Sampled			Feb 17, 2017	Feb 17, 2017
Test/Reference	LOR	Unit		
Heavy Metals				
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 21, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Feb 21, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 21, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 21, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 21, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 21, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 21, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Feb 24, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 21, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 21, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 21, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Feb 21, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 21, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 24, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 24, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 24, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 24, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 24, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 24, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 17, 2017 3:28 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 534765	Due: Feb 24, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Zinc	Zinc (filtered)	Alkalinity (spectated)	Alkali Metals	
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X													X	X	X							X	X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X		X	X		
Brisbane Laboratory - NATA Site # 20794																																							
Perth Laboratory - NATA Site # 18217																																							
External Laboratory																																							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																		
1	MW33	Feb 17, 2017		Water	M17-Fe18989	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW35	Feb 17, 2017		Water	M17-Fe18990	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW43	Feb 17, 2017		Water	M17-Fe18991	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW44	Feb 17, 2017		Water	M17-Fe18992	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW29	Feb 17, 2017		Water	M17-Fe18993	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	MW30	Feb 17, 2017		Water	M17-Fe18994	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	MW22	Feb 17, 2017		Water	M17-Fe18995	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	MW23	Feb 17, 2017		Water	M17-Fe18996	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	MW24	Feb 17, 2017		Water	M17-Fe18997	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Feb 17, 2017 3:28 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	534765	Due:	Feb 24, 2017
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals		
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X												X	X	X							X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X			X	X				
Brisbane Laboratory - NATA Site # 20794																																								
Perth Laboratory - NATA Site # 18217																																								
10	MW25	Feb 17, 2017		Water	M17-Fe18998	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW26	Feb 17, 2017		Water	M17-Fe18999	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW27	Feb 17, 2017		Water	M17-Fe19000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	QC314	Feb 17, 2017		Water	M17-Fe19001			X		X				X			X		X		X		X		X						X			X						
14	QC315	Feb 17, 2017		Water	M17-Fe19002			X		X				X			X		X		X		X		X						X			X						
Test Counts						12	12	14	12	14	12	14	12	12	14	12	12	14	12	14	12	14	12	14	12	14	12	14	12	12	12	12	14	12	12	14	12	12		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	115			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Ammonia (as N)	%	90	70-130	Pass			
Chloride	%	105	70-130	Pass			
Nitrate & Nitrite (as N)	%	94	70-130	Pass			
Nitrate (as N)	%	94	70-130	Pass			
Nitrite (as N)	%	95	70-130	Pass			
Phosphate total (as P)	%	100	70-130	Pass			
Phosphorus reactive (as P)	%	114	70-130	Pass			
Sulphate (as SO4)	%	122	70-130	Pass			
Total Dissolved Solids	%	103	70-130	Pass			
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	101	70-130	Pass			
Total Alkalinity (as CaCO3)	%	106	70-130	Pass			
LCS - % Recovery							
Heavy Metals							
Aluminium	%	103	70-130	Pass			
Arsenic	%	97	70-130	Pass			
Cadmium	%	103	70-130	Pass			
Chromium	%	96	70-130	Pass			
Copper	%	96	70-130	Pass			
Iron	%	92	70-130	Pass			
Lead	%	95	70-130	Pass			
Manganese	%	101	70-130	Pass			
Mercury	%	93	70-130	Pass			
Nickel	%	90	70-130	Pass			
Selenium	%	100	70-130	Pass			
Zinc	%	96	70-130	Pass			
LCS - % Recovery							
Alkali Metals							
Calcium	%	97	70-130	Pass			
Magnesium	%	102	70-130	Pass			
Potassium	%	93	70-130	Pass			
Sodium	%	95	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
				Result 1			
Ammonia (as N)	B17-Fe23250	NCP	%	92	70-130	Pass	
Nitrate & Nitrite (as N)	B17-Fe23250	NCP	%	89	70-130	Pass	
Nitrate (as N)	B17-Fe23250	NCP	%	89	70-130	Pass	
Nitrite (as N)	B17-Fe23250	NCP	%	98	70-130	Pass	
Sulphate (as SO4)	B17-Fe18813	NCP	%	113	70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Fe18989	CP	%	96	70-130	Pass	
Spike - % Recovery							
Alkalinity (speciated)				Result 1			
Carbonate Alkalinity (as CaCO3)	M17-Fe18807	NCP	%	76	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Zinc	S17-Fe19710	NCP	%	93	70-130	Pass	
Spike - % Recovery							
Alkali Metals				Result 1			
Calcium	M17-Fe18989	CP	%	88	70-130	Pass	
Magnesium	M17-Fe18989	CP	%	92	70-130	Pass	
Potassium	M17-Fe18989	CP	%	82	70-130	Pass	
Sodium	M17-Fe18989	CP	%	84	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Fe18990	CP	%	83			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)									
				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe18990	CP	%	128			70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe18990	CP	%	128			70-130	Pass	
Spike - % Recovery									
Heavy Metals									
				Result 1					
Aluminium	M17-Fe18990	CP	%	124			70-130	Pass	
Arsenic	M17-Fe18990	CP	%	101			70-130	Pass	
Cadmium	M17-Fe18990	CP	%	106			70-130	Pass	
Chromium	M17-Fe18990	CP	%	99			70-130	Pass	
Copper	M17-Fe18990	CP	%	98			70-130	Pass	
Iron	S17-Fe24365	NCP	%	85			70-130	Pass	
Lead	M17-Fe18990	CP	%	98			70-130	Pass	
Manganese	M17-Fe18990	CP	%	102			70-130	Pass	
Mercury	M17-Fe18990	CP	%	96			70-130	Pass	
Nickel	M17-Fe18990	CP	%	96			70-130	Pass	
Selenium	M17-Fe18990	CP	%	108			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Fe18999	CP	%	103			70-130	Pass	
Spike - % Recovery									
Alkali Metals									
				Result 1					
Calcium	M17-Fe18999	CP	%	109			70-130	Pass	
Magnesium	M17-Fe18999	CP	%	112			70-130	Pass	
Potassium	M17-Fe18999	CP	%	114			70-130	Pass	
Sodium	M17-Fe18999	CP	%	116			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	B17-Fe23250	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Conductivity (at 25°C)	M17-Fe18989	CP	uS/cm	350	330	6.0	30%	Pass	
Nitrate & Nitrite (as N)	B17-Fe23250	NCP	mg/L	0.46	0.44	4.0	30%	Pass	
Nitrate (as N)	B17-Fe23250	NCP	mg/L	0.46	0.44	4.0	30%	Pass	
Nitrite (as N)	B17-Fe23250	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M17-Fe18989	CP	pH Units	7.4	7.5	pass	30%	Pass	
Phosphorus reactive (as P)	M17-Fe18989	CP	mg/L	< 0.05	0.06	1.5	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Fe20427	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)									
				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe18989	CP	mg/L	78	72	8.0	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Fe18989	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe18989	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe18989	CP	mg/L	78	72	8.0	30%	Pass	
Duplicate									
Heavy Metals									
				Result 1	Result 2	RPD			
Aluminium	M17-Fe18989	CP	mg/L	0.35	0.35	<1	30%	Pass	
Arsenic	M17-Fe18989	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Fe18989	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Fe18989	CP	mg/L	0.003	0.003	2.0	30%	Pass	
Copper	M17-Fe18989	CP	mg/L	0.001	0.001	9.0	30%	Pass	
Lead	M17-Fe18989	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Manganese	M17-Fe18989	CP	mg/L	0.009	0.010	2.0	30%	Pass
Mercury	M17-Fe18989	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe18989	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M17-Fe18989	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Fe18989	CP	mg/L	0.012	0.009	29	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe18989	CP	mg/L	25	25	3.0	30%	Pass
Magnesium	M17-Fe18989	CP	mg/L	5.1	5.2	3.0	30%	Pass
Potassium	M17-Fe18989	CP	mg/L	2.7	2.9	7.0	30%	Pass
Sodium	M17-Fe18989	CP	mg/L	31	34	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron	S17-Fe24364	NCP	mg/L	0.19	0.21	8.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M17-Fe18991	CP	mg/L	3400	3500	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe18992	CP	uS/cm	930	940	1.0	30%	Pass
pH	M17-Fe18992	CP	pH Units	7.8	7.8	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe18992	CP	mg/L	180	190	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Fe18992	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe18992	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Fe18992	CP	mg/L	180	190	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M17-Fe18994	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Fe18996	CP	mg/L	23	20	15	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Fe18997	CP	mg/L	51	56	9.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe18998	CP	mg/L	69	67	3.3	30%	Pass
Sulphate (as SO ₄)	M17-Fe18998	CP	mg/L	36	36	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Fe18999	CP	mg/L	1.2	1.3	5.0	30%	Pass
Arsenic	M17-Fe18999	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	M17-Fe18999	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M17-Fe18999	CP	mg/L	0.003	0.003	6.0	30%	Pass
Copper	M17-Fe18999	CP	mg/L	0.001	0.002	34	30%	Fail
Lead	M17-Fe18999	CP	mg/L	0.001	0.001	25	30%	Pass
Manganese	M17-Fe18999	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Fe18999	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe18999	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M17-Fe18999	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Fe18999	CP	mg/L	0.006	0.006	1.0	30%	Pass

Q15

Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Magnesium	M17-Fe18999	CP	mg/L	5.3	5.6	4.0	30%	Pass	
Sodium	M17-Fe18999	CP	mg/L	39	35	12	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 20, 2017 4:21 PM**
Eurofins | mgt reference: **534877**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

MW54 was not received, only filtered metals bottles provided for QC samples

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **534877-W**
 Project name NL_BASELINE GW_SW MONITORING
 Project ID ENAUPERT04483AA
 Received Date Feb 20, 2017

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			M17-Fe19924	M17-Fe19926	M17-Fe19927	M17-Fe19928
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	36	61	28	54
Ammonia (as N)	0.01	mg/L	0.82	0.06	1.7	1.1
Chloride	1	mg/L	2600	1400	13000	2700
Conductivity (at 25°C)	1	uS/cm	8500	4500	36000	8100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	38	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	37	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.22	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.2	2.0	4.9
pH	0.1	pH Units	6.3	6.2	7.3	5.9
Phosphate total (as P)	0.05	mg/L	0.10	< 0.05	0.46	0.70
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.26	< 0.05
Sulphate (as SO4)	5	mg/L	180	180	1300	290
Total Dissolved Solids	10	mg/L	4700	2500	23000	4700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	0.3	3.7	6.0
Total Nitrogen (as N)	0.2	mg/L	0.8	0.3	42	6.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	40	21	130	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	40	21	130	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.28	0.07	0.47	0.16
Aluminium (filtered)	0.05	mg/L	0.26	< 0.05	0.32	0.07
Arsenic	0.001	mg/L	0.001	0.003	0.003	0.012
Arsenic (filtered)	0.001	mg/L	0.002	0.003	0.003	0.014
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.0013	0.00020
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.0014	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	0.001	0.028	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	0.010	< 0.001
Iron	0.05	mg/L	3.1	16	1.1	8.3
Iron (filtered)	0.05	mg/L	3.1	15	0.36	8.2
Lead	0.001	mg/L	0.010	< 0.001	< 0.001	0.006
Lead (filtered)	0.001	mg/L	0.026	< 0.001	< 0.001	0.001

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			M17-Fe19924	M17-Fe19926	M17-Fe19927	M17-Fe19928
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.016	< 0.005	0.16	0.11
Manganese (filtered)	0.005	mg/L	0.016	< 0.005	0.14	0.11
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	0.012	0.017
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.011	0.015
Selenium	0.001	mg/L	0.001	< 0.001	0.012	0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	0.012	< 0.001
Zinc	0.005	mg/L	0.23	0.011	1.1	0.66
Zinc (filtered)	0.005	mg/L	0.006	0.007	0.54	0.61
Alkali Metals						
Calcium	0.5	mg/L	29	22	180	61
Magnesium	0.5	mg/L	170	120	830	220
Potassium	0.5	mg/L	35	8.3	120	22
Sodium	0.5	mg/L	1300	690	5900	1100

Client Sample ID			MW11 Water	MW12 Water	MW13 Water	MW14 Water
Sample Matrix			M17-Fe19930	M17-Fe19931	M17-Fe19932	M17-Fe19933
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	57	30	49	34
Ammonia (as N)	0.01	mg/L	0.02	0.01	0.07	0.03
Chloride	1	mg/L	56	44	41	32
Conductivity (at 25°C)	1	uS/cm	270	200	250	190
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.84
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.84
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.8
pH	0.1	pH Units	4.3	4.3	4.2	4.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	43	27	36	23
Total Dissolved Solids	10	mg/L	^{Q19} 190	130	^{Q19} 180	^{Q19} 250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.8
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	1.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	5.6	2.5	1.5	3.5
Aluminium (filtered)	0.05	mg/L	5.2	2.2	1.4	0.41
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW11 Water	MW12 Water	MW13 Water	MW14 Water
Sample Matrix			M17-Fe19930	M17-Fe19931	M17-Fe19932	M17-Fe19933
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	0.006
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.88	0.77	5.4	1.1
Iron (filtered)	0.05	mg/L	0.31	0.19	1.2	0.26
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.004	0.002	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.003	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	0.003	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	0.006	0.027	0.007
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	< 0.5	0.9	4.5	6.4
Magnesium	0.5	mg/L	7.5	3.8	4.9	4.5
Potassium	0.5	mg/L	< 0.5	< 0.5	1.0	< 0.5
Sodium	0.5	mg/L	25	28	24	23

Client Sample ID			MW15 Water	MW16 Water	SWL21_1 Water	SWL21_2 Water
Sample Matrix			M17-Fe19934	M17-Fe19935	M17-Fe19936	M17-Fe19937
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	38	81	14	12
Ammonia (as N)	0.01	mg/L	0.19	0.16	0.22	0.10
Chloride	1	mg/L	39	81	560	550
Conductivity (at 25°C)	1	uS/cm	260	420	2000	2000
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	3.5	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.06	3.5	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.8	3.8	2.3
pH	0.1	pH Units	4.4	4.3	7.3	7.3
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	1.6	1.8
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.59	0.57
Sulphate (as SO4)	5	mg/L	55	59	33	34
Total Dissolved Solids	10	mg/L	170	270	^{Q19} 1400	^{Q19} 1400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.0	4.0	2.4
Total Nitrogen (as N)	0.2	mg/L	0.5	4.5	4.0	2.4
Turbidity	1	NTU	-	-	76	35

Client Sample ID			MW15 Water	MW16 Water	SWL21_1 Water	SWL21_2 Water
Sample Matrix			M17-Fe19934	M17-Fe19935	M17-Fe19936	M17-Fe19937
Eurofins mgt Sample No.			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	74	66
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	74	66
Heavy Metals						
Aluminium	0.05	mg/L	0.56	5.9	0.86	1.1
Aluminium (filtered)	0.05	mg/L	0.34	5.5	0.71	0.31
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.004	0.005
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	0.003
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00052	0.0016
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.0014	0.00015
Chromium	0.001	mg/L	0.001	0.003	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper	0.001	mg/L	0.001	< 0.001	0.003	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Iron	0.05	mg/L	1.7	1.8	20	22
Iron (filtered)	0.05	mg/L	0.16	0.42	20	8.0
Lead	0.001	mg/L	< 0.001	0.011	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.005	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	0.49	0.85
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.71	0.27
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.006	0.011
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.009	0.004
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.022	0.005	0.059	0.15
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	0.13	0.018
Alkali Metals						
Calcium	0.5	mg/L	5.5	5.0	29	28
Magnesium	0.5	mg/L	9.2	8.7	49	49
Potassium	0.5	mg/L	1.7	1.4	13	14
Sodium	0.5	mg/L	26	44	280	280
Pathogens						
E.coli	1	MPN/100mL	-	-	580	380
Thermotolerant Coliforms	1	MPN/100mL	-	-	24000	17000

Client Sample ID			SWL21_3	QC316	QC317	QC319
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe19938	M17-Fe19939	M17-Fe19940	M17-Fe19941
Date Sampled			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	15	-	-	14
Ammonia (as N)	0.01	mg/L	0.04	-	-	0.03
Chloride	1	mg/L	530	-	-	520
Conductivity (at 25°C)	1	uS/cm	1900	-	-	2000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	-	-	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	12	-	-	22
pH	0.1	pH Units	7.2	-	-	7.2
Phosphate total (as P)	0.05	mg/L	1.8	-	-	2.6
Phosphorus reactive (as P)	0.05	mg/L	0.49	-	-	0.48
Sulphate (as SO ₄)	5	mg/L	33	-	-	31
Total Dissolved Solids	10	mg/L	^{Q19} 1400	-	-	^{Q19} 1500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	12	-	-	22
Total Nitrogen (as N)	0.2	mg/L	12	-	-	22
Turbidity	1	NTU	200	-	-	98
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	67	-	-	70
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	67	-	-	70
Heavy Metals						
Aluminium	0.05	mg/L	3.3	-	-	1.5
Aluminium (filtered)	0.05	mg/L	0.34	< 0.05	< 0.05	0.11
Arsenic	0.001	mg/L	0.007	-	-	0.004
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	0.0037	-	-	0.0013
Cadmium (filtered)	0.00005	mg/L	0.00015	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	-	-	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	-	-	0.002
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	50	-	-	19
Iron (filtered)	0.05	mg/L	6.0	< 0.05	< 0.05	4.7
Lead	0.001	mg/L	0.002	-	-	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.70	-	-	0.36
Manganese (filtered)	0.005	mg/L	0.22	< 0.005	< 0.005	0.21
Mercury	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.017	-	-	0.009
Nickel (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001	0.003
Selenium	0.001	mg/L	< 0.001	-	-	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.54	-	-	0.22
Zinc (filtered)	0.005	mg/L	0.021	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL21_3	QC316	QC317	QC319
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe19938	M17-Fe19939	M17-Fe19940	M17-Fe19941
Date Sampled			Feb 20, 2017	Feb 20, 2017	Feb 20, 2017	Feb 20, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	27	-	-	28
Magnesium	0.5	mg/L	46	-	-	48
Potassium	0.5	mg/L	14	-	-	13
Sodium	0.5	mg/L	270	-	-	270
Pathogens						
E.coli	1	MPN/100mL	10000	-	-	6900
Thermotolerant Coliforms	1	MPN/100mL	20000	-	-	16000

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 21, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Feb 21, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 21, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 21, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 21, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 21, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 21, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Feb 27, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 21, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 21, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 22, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 22, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Feb 22, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 22, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 21, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 21, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Feb 27, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Feb 27, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Feb 27, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Feb 27, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Feb 27, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Feb 27, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 20, 2017 4:21 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 534877	Due: Feb 27, 2017
	Phone: 08 9355 7100	Priority: 5 Day
Project Name: NL_BASELINE GW_SW MONITORING	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X		X											X	X	X					X	X	X			X	X	X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X						X	X					
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	MW16	Feb 20, 2017		Water	M17-Fe19935	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	SWL21_1	Feb 20, 2017		Water	M17-Fe19936	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL21_2	Feb 20, 2017		Water	M17-Fe19937	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL21_3	Feb 20, 2017		Water	M17-Fe19938	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	QC316	Feb 20, 2017		Water	M17-Fe19939			X	X	X			X			X			X	X	X	X	X	X	X	X	X				X								X					
15	QC317	Feb 20, 2017		Water	M17-Fe19940			X	X	X			X			X			X	X	X	X	X	X	X	X	X				X								X					
16	QC319	Feb 20, 2017		Water	M17-Fe19941	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts					14	14	16	14	16	14	16	14	14	16	14	14	16	4	14	16	14	16	14	16	14	16	14	16	14	14	14	14	14	14	16	14	4	14	4	14	16	14	14	14

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	115			70-130	Pass		
Ammonia (as N)	%	88			70-130	Pass		
Chloride	%	101			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	99			70-130	Pass		
Phosphate total (as P)	%	106			70-130	Pass		
Phosphorus reactive (as P)	%	115			70-130	Pass		
Sulphate (as SO ₄)	%	115			70-130	Pass		
Total Dissolved Solids	%	103			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	74			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	102			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	109			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	91			70-130	Pass		
Arsenic	%	90			70-130	Pass		
Cadmium	%	94			70-130	Pass		
Chromium	%	87			70-130	Pass		
Copper	%	89			70-130	Pass		
Iron	%	90			70-130	Pass		
Iron (filtered)	%	103			70-130	Pass		
Lead	%	89			70-130	Pass		
Manganese	%	91			70-130	Pass		
Mercury	%	85			70-130	Pass		
Nickel	%	90			70-130	Pass		
Selenium	%	89			70-130	Pass		
Zinc	%	106			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	97			70-130	Pass		
Magnesium	%	106			70-130	Pass		
Potassium	%	92			70-130	Pass		
Sodium	%	92			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M17-Fe22605	NCP	%	86		70-130	Pass	
Spike - % Recovery								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe18990	NCP	%	128		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Fe19920	NCP	%	112		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Fe18990	NCP	%	128		70-130	Pass	
Spike - % Recovery								
				Result 1				
Aluminium	M17-Fe21456	NCP	%	81		70-130	Pass	
Arsenic	M17-Fe21456	NCP	%	89		70-130	Pass	
Cadmium	M17-Fe21456	NCP	%	91		70-130	Pass	
Chromium	M17-Fe21456	NCP	%	88		70-130	Pass	
Copper	M17-Fe21456	NCP	%	89		70-130	Pass	
Iron	M17-Fe21456	NCP	%	89		70-130	Pass	
Lead	M17-Fe21456	NCP	%	88		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Manganese	M17-Fe21456	NCP	%	89			70-130	Pass	
Mercury	M17-Fe21456	NCP	%	88			70-130	Pass	
Nickel	M17-Fe21456	NCP	%	89			70-130	Pass	
Selenium	M17-Fe21456	NCP	%	85			70-130	Pass	
Zinc	M17-Fe21456	NCP	%	88			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Fe19926	CP	%	98			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Fe19931	CP	%	96			70-130	Pass	
Magnesium	M17-Fe19931	CP	%	101			70-130	Pass	
Potassium	M17-Fe19931	CP	%	86			70-130	Pass	
Sodium	M17-Fe19931	CP	%	93			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M17-Fe19933	CP	%	88			70-130	Pass	
Chloride	M17-Fe19933	CP	%	86			70-130	Pass	
Nitrate & Nitrite (as N)	M17-Fe19933	CP	%	91			70-130	Pass	
Nitrate (as N)	M17-Fe19933	CP	%	91			70-130	Pass	
Nitrite (as N)	M17-Fe19933	CP	%	97			70-130	Pass	
Sulphate (as SO4)	M17-Fe19933	CP	%	91			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	M17-Fe19935	CP	%	109			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Fe19936	CP	%	78			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Fe19941	CP	%	114			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M17-Fe19924	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	M17-Fe19924	CP	mg/L	4700	4700	1.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Fe27117	NCP	mg/L	38	42	10	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Fe19924	CP	mg/L	0.28	0.33	17	30%	Pass	
Arsenic	M17-Fe19924	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Cadmium	M17-Fe19924	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Fe19924	CP	mg/L	0.001	0.002	19	30%	Pass	
Copper	M17-Fe19924	CP	mg/L	0.001	0.001	1.0	30%	Pass	
Iron	M17-Fe19924	CP	mg/L	3.1	2.6	1.0	30%	Pass	
Lead	M17-Fe19924	CP	mg/L	0.010	0.010	2.0	30%	Pass	
Manganese	M17-Fe19924	CP	mg/L	0.016	0.016	2.0	30%	Pass	
Mercury	M17-Fe19924	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Fe19924	CP	mg/L	0.002	0.003	17	30%	Pass	
Selenium	M17-Fe19924	CP	mg/L	0.001	< 0.001	28	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M17-Fe19926	CP	uS/cm	4500	4800	<1	30%	Pass	
pH	M17-Fe19926	CP	pH Units	6.2	6.2	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe19926	CP	mg/L	21	21	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Fe19926	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe19926	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Fe19926	CP	mg/L	21	21	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M17-Fe19928	CP	mg/L	4700	4700	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Fe19931	CP	mg/L	30	31	2.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe19931	CP	mg/L	0.9	0.9	2.0	30%	Pass
Magnesium	M17-Fe19931	CP	mg/L	3.8	3.8	1.0	30%	Pass
Potassium	M17-Fe19931	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Sodium	M17-Fe19931	CP	mg/L	28	27	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	M17-Fe19932	CP	mg/L	49	50	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Fe19933	CP	mg/L	0.03	0.04	4.0	30%	Pass
Chloride	M17-Fe19933	CP	mg/L	32	32	1.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Fe19933	CP	mg/L	0.84	0.85	1.0	30%	Pass
Nitrate (as N)	M17-Fe19933	CP	mg/L	0.84	0.85	1.0	30%	Pass
Nitrite (as N)	M17-Fe19933	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphate (as SO ₄)	M17-Fe19933	CP	mg/L	23	23	1.3	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M17-Fe19934	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe19935	CP	mg/L	81	78	3.9	30%	Pass
Sulphate (as SO ₄)	M17-Fe19935	CP	mg/L	59	59	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Fe20322	NCP	NTU	2.4	2.6	6.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Fe19936	CP	mg/L	0.86	0.65	28	30%	Pass
Arsenic	M17-Fe19936	CP	mg/L	0.004	0.004	12	30%	Pass
Cadmium	M17-Fe19936	CP	mg/L	0.00052	0.00056	7.0	30%	Pass
Chromium	M17-Fe19936	CP	mg/L	0.002	0.002	27	30%	Pass
Copper	M17-Fe19936	CP	mg/L	0.003	0.003	20	30%	Pass
Lead	M17-Fe19936	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-Fe19936	CP	mg/L	0.49	0.48	1.0	30%	Pass
Mercury	M17-Fe19936	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe19936	CP	mg/L	0.006	0.006	6.0	30%	Pass
Selenium	M17-Fe19936	CP	mg/L	0.002	0.001	33	30%	Fail
Zinc	M17-Fe19936	CP	mg/L	0.059	0.075	25	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe19937	CP	uS/cm	2000	1900	6.0	30%	Pass
pH	M17-Fe19937	CP	pH Units	7.3	7.3	pass	30%	Pass

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe19937	CP	mg/L	66	64	3.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Fe19937	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe19937	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Fe19937	CP	mg/L	66	64	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Fe19938	CP	mg/L	0.49	0.51	3.7	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	No
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Feb 21, 2017 4:20 PM**
Eurofins | mgt reference: **535050**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **535050-W**
 Project name **NL_BASELINE GW_SW MONITORING**
 Project ID **ENAUPERT04483AA**
 Received Date **Feb 21, 2017**

Client Sample ID			MW54 Water	MW40 Water	MW41 Water	MW42 Water
Sample Matrix			M17-Fe21455	M17-Fe21456	M17-Fe21457	M17-Fe21458
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	15	45	130	38
Ammonia (as N)	0.01	mg/L	0.06	0.23	0.90	0.21
Chloride	1	mg/L	390	93	170	41
Conductivity (at 25°C)	1	uS/cm	1400	320	670	200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	5.7	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	5.6	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.12	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.0	5.1	0.8
pH	0.1	pH Units	7.5	4.6	3.6	4.2
Phosphate total (as P)	0.05	mg/L	0.17	< 0.05	0.85	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.71	< 0.05
Sulphate (as SO4)	5	mg/L	40	5.9	21	< 5
Total Dissolved Solids	10	mg/L	940	^{Q19} 290	^{Q19} 680	^{Q19} 190
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.2	6.0	1.0
Total Nitrogen (as N)	0.2	mg/L	< 0.2	1.2	12	1.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	130	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	130	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.06	1.4	1.6	0.36
Aluminium (filtered)	0.05	mg/L	< 0.05	1.1	1.5	0.32
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.00017	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00014	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Iron	0.05	mg/L	2.4	0.35	0.59	0.13
Iron (filtered)	0.05	mg/L	2.1	0.31	0.52	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW40 Water	MW41 Water	MW42 Water
Sample Matrix			M17-Fe21455	M17-Fe21456	M17-Fe21457	M17-Fe21458
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.066	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.067	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.006	0.017	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.015	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	74	2.4	8.7	1.4
Magnesium	0.5	mg/L	27	7.3	12	4.2
Potassium	0.5	mg/L	6.4	1.6	1.9	0.9
Sodium	0.5	mg/L	160	48	86	29

Client Sample ID			MW48 Water	MW49 Water	MW32 Water	MW31 Water
Sample Matrix			M17-Fe21459	M17-Fe21460	M17-Fe21461	M17-Fe21462
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	49	38	33	69
Ammonia (as N)	0.01	mg/L	0.05	0.05	0.26	0.23
Chloride	1	mg/L	760	1500	84	140
Conductivity (at 25°C)	1	uS/cm	2900	5000	320	680
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.52	12
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	0.49	12
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	0.04
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.60	4.6
pH	0.1	pH Units	4.7	5.2	5.8	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.24	2.2
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.22	2.1
Sulphate (as SO ₄)	5	mg/L	120	250	11	70
Total Dissolved Solids	10	mg/L	1700	2900	^{Q19} 230	^{Q19} 600
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	0.9	4.8
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	1.4	17
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.6	0.15	0.46	3.1
Aluminium (filtered)	0.05	mg/L	0.27	< 0.05	0.43	3.1
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00025	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW48 Water	MW49 Water	MW32 Water	MW31 Water
Sample Matrix			M17-Fe21459	M17-Fe21460	M17-Fe21461	M17-Fe21462
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	0.00025	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.002	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	0.006	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	0.002
Iron	0.05	mg/L	0.67	0.28	0.31	0.26
Iron (filtered)	0.05	mg/L	0.08	< 0.05	0.28	0.25
Lead	0.001	mg/L	0.008	0.13	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.007	0.057	< 0.001	< 0.001
Manganese	0.005	mg/L	0.023	0.015	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.025	0.022	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.025	0.005	0.002	0.001
Nickel (filtered)	0.001	mg/L	0.025	0.006	0.002	0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.030	0.080	0.017	0.006
Zinc (filtered)	0.005	mg/L	0.031	0.090	0.018	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	13	27	3.8	26
Magnesium	0.5	mg/L	64	140	3.9	15
Potassium	0.5	mg/L	9.6	13	4.4	13
Sodium	0.5	mg/L	440	720	52	70

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M17-Fe21463	M17-Fe21464	M17-Fe21465	M17-Fe21466
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	70	47	260	74
Ammonia (as N)	0.01	mg/L	0.04	0.12	0.01	0.05
Chloride	1	mg/L	43	85	150	48
Conductivity (at 25°C)	1	uS/cm	270	320	630	230
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.71
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.71
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.20	0.2	1.8	0.15
pH	0.1	pH Units	4.2	4.8	3.3	4.1
Phosphate total (as P)	0.05	mg/L	< 0.05	0.11	^{G01} 0.14	1.2
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	47	25	120	52
Total Dissolved Solids	10	mg/L	170	210	^{Q19} 540	^{Q19} 180
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.2	0.3	1.8	0.2
Total Nitrogen (as N)	0.2	mg/L	0.24	0.3	1.8	0.9

Client Sample ID			MW17 Water	MW18 Water	MW19 Water	MW20 Water
Sample Matrix			M17-Fe21463	M17-Fe21464	M17-Fe21465	M17-Fe21466
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	3.3	2.3	46	11
Aluminium (filtered)	0.05	mg/L	3.3	2.1	37	10
Arsenic	0.001	mg/L	< 0.001	0.002	0.001	0.002
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.005	0.002	0.017	0.002
Chromium (filtered)	0.001	mg/L	0.005	0.001	0.012	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	0.020	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.5	3.4	0.67	0.39
Iron (filtered)	0.05	mg/L	5.4	3.3	0.53	0.32
Lead	0.001	mg/L	0.006	0.002	0.020	< 0.001
Lead (filtered)	0.001	mg/L	0.007	0.002	0.008	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	0.012	0.005
Nickel (filtered)	0.001	mg/L	0.001	0.002	0.012	0.006
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	< 0.005	0.016	0.006
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	0.008	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.8	3.4	1.6	< 0.5
Magnesium	0.5	mg/L	4.3	6.7	5.2	2.9
Potassium	0.5	mg/L	0.8	1.4	1.4	< 0.5
Sodium	0.5	mg/L	31	43	69	30

Client Sample ID			MW21 Water	SWL17-1 Water	SWL19-1 Water	SWL19-3 Water
Sample Matrix			M17-Fe21467	M17-Fe21468	M17-Fe21469	M17-Fe21470
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	64	44	30	24
Ammonia (as N)	0.01	mg/L	0.05	< 0.01	0.04	0.03
Chloride	1	mg/L	42	100	950	930
Conductivity (at 25°C)	1	uS/cm	220	310	3200	3100
Nitrate & Nitrite (as N)	0.05	mg/L	4.2	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	4.2	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			MW21 Water	SWL17-1 Water	SWL19-1 Water	SWL19-3 Water
Sample Matrix			M17-Fe21467	M17-Fe21468	M17-Fe21469	M17-Fe21470
Eurofins mgt Sample No.			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.1	1.6	1.4
pH	0.1	pH Units	4.0	3.9	6.7	6.8
Phosphate total (as P)	0.05	mg/L	0.14	< 0.05	0.22	0.17
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.34	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	30	17	41	29
Total Dissolved Solids	10	mg/L	^{Q19} 180	^{Q19} 300	2000	2000
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	1.1	1.6	1.4
Total Nitrogen (as N)	0.2	mg/L	4.2	1.1	1.6	1.4
Turbidity	1	NTU	-	7.8	220	140
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	68	60
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	68	60
Heavy Metals						
Aluminium	0.05	mg/L	13	0.50	0.28	0.32
Aluminium (filtered)	0.05	mg/L	9.3	0.45	0.16	0.15
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	0.00010	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.010	< 0.001	0.002	0.002
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	0.001	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	0.26	16	16
Iron (filtered)	0.05	mg/L	1.1	0.18	4.8	6.2
Lead	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.024	< 0.005	0.59	0.42
Manganese (filtered)	0.005	mg/L	0.008	< 0.005	0.48	0.095
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	< 0.001	0.003	0.002
Nickel (filtered)	0.001	mg/L	0.005	< 0.001	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.026	0.006	0.011	0.007
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	1.2	2.5	15	14
Magnesium	0.5	mg/L	2.8	8.0	70	67
Potassium	0.5	mg/L	3.0	1.5	10	8.8
Sodium	0.5	mg/L	30	41	470	470
Pathogens						
E.coli	1	MPN/100mL	-	^{M15} <10	130	20
Thermotolerant Coliforms	1	MPN/100mL	-	30	590	52

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	QC321
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe21471	M17-Fe21472	M17-Fe21473	M17-Fe21474
Date Sampled			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	22	18	21	50
Ammonia (as N)	0.01	mg/L	0.04	0.11	0.07	0.10
Chloride	1	mg/L	1300	1300	1300	91
Conductivity (at 25°C)	1	uS/cm	4100	4000	3900	320
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.4	2.7	2.5	0.15
pH	0.1	pH Units	6.9	5.9	5.9	4.6
Phosphate total (as P)	0.05	mg/L	12	^{G01} 0.15	^{G01} 0.14	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	< 5	< 5	< 5	27
Total Dissolved Solids	10	mg/L	2700	2700	2700	220
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.4	2.8	2.6	0.3
Total Nitrogen (as N)	0.2	mg/L	2.4	2.8	2.6	0.25
Turbidity	1	NTU	150	150	140	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	65	76	68	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	65	76	68	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.15	0.15	0.15	2.2
Aluminium (filtered)	0.05	mg/L	0.13	0.12	0.12	2.2
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	0.001	0.001	0.001	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	24	25	25	3.5
Iron (filtered)	0.05	mg/L	10	10	10	3.5
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Manganese	0.005	mg/L	0.071	0.073	0.072	< 0.005
Manganese (filtered)	0.005	mg/L	0.071	0.071	0.070	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.003	0.002
Nickel (filtered)	0.001	mg/L	0.003	0.002	0.003	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	< 0.005	< 0.005	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL20-1	SWL20-2	SWL20-3	QC321
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Fe21471	M17-Fe21472	M17-Fe21473	M17-Fe21474
Date Sampled			Feb 21, 2017	Feb 21, 2017	Feb 21, 2017	Feb 21, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	13	14	13	3.6
Magnesium	0.5	mg/L	75	83	75	6.4
Potassium	0.5	mg/L	12	13	12	1.4
Sodium	0.5	mg/L	680	680	670	43
Pathogens						
E.coli	1	MPN/100mL	280	41	63	-
Thermotolerant Coliforms	1	MPN/100mL	1700	2100	1800	-

Client Sample ID			QC322	QC323
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M17-Fe21475	M17-Fe21476
Date Sampled			Feb 21, 2017	Feb 21, 2017
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Feb 22, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 01, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Feb 22, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Feb 22, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Feb 22, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Feb 22, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 22, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Feb 22, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Feb 23, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Feb 22, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 23, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Feb 23, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Feb 23, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Feb 23, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Feb 22, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Feb 22, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 01, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 01, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 01, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 01, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 01, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 01, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 21, 2017 4:20 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 535050	Due: Feb 28, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)						
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X											X	X	X							X	X	X		X	X	X						
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X						X	X								
Brisbane Laboratory - NATA Site # 20794																																																	
Perth Laboratory - NATA Site # 18217																																																	
External Laboratory																																																	
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																												
1	MW54	Feb 21, 2017		Water	M17-Fe21455	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW40	Feb 21, 2017		Water	M17-Fe21456	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW41	Feb 21, 2017		Water	M17-Fe21457	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW42	Feb 21, 2017		Water	M17-Fe21458	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW48	Feb 21, 2017		Water	M17-Fe21459	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW49	Feb 21, 2017		Water	M17-Fe21460	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW32	Feb 21, 2017		Water	M17-Fe21461	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8	MW31	Feb 21, 2017		Water	M17-Fe21462	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9	MW17	Feb 21, 2017		Water	M17-Fe21463	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Feb 21, 2017 4:20 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	535050	Due:	Feb 28, 2017
Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X							X			X		X											X	X	X					X	X	X			X	X	X			
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X					
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
10	MW18	Feb 21, 2017		Water	M17-Fe21464	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW19	Feb 21, 2017		Water	M17-Fe21465	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	MW20	Feb 21, 2017		Water	M17-Fe21466	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	MW21	Feb 21, 2017		Water	M17-Fe21467	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	SWL17-1	Feb 21, 2017		Water	M17-Fe21468	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	SWL19-1	Feb 21, 2017		Water	M17-Fe21469	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	SWL19-3	Feb 21, 2017		Water	M17-Fe21470	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	SWL20-1	Feb 21, 2017		Water	M17-Fe21471	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
18	SWL20-2	Feb 21, 2017		Water	M17-Fe21472	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	SWL20-3	Feb 21, 2017		Water	M17-Fe21473	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	QC321	Feb 21, 2017		Water	M17-Fe21474	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	QC322	Feb 21, 2017		Water	M17-Fe21475			X			X			X		X				X		X		X		X		X																	

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Feb 21, 2017 4:20 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 535050	Due: Feb 28, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail				Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271				X						X			X		X		X									X	X	X						X	X	X			X	X	X
Sydney Laboratory - NATA Site # 18217					X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X			
Brisbane Laboratory - NATA Site # 20794																																									
Perth Laboratory - NATA Site # 18217																																									
22	QC323	Feb 21, 2017	Water	M17-Fe21476		X	X	X				X			X			X	X	X	X	X	X	X	X	X				X							X				
Test Counts				20	20	22	20	22	20	22	20	20	22	20	20	22	6	20	22	20	22	20	22	20	22	20	22	20	20	20	22	20	6	20	6	20	22	20	20	20	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	119			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	91			70-130	Pass		
Chloride	%	108			70-130	Pass		
Nitrate & Nitrite (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	94			70-130	Pass		
Nitrite (as N)	%	102			70-130	Pass		
Phosphate total (as P)	%	110			70-130	Pass		
Phosphorus reactive (as P)	%	127			70-130	Pass		
Sulphate (as SO ₄)	%	121			70-130	Pass		
Total Dissolved Solids	%	100			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	117			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	107			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	109			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	91			70-130	Pass		
Arsenic	%	90			70-130	Pass		
Cadmium	%	94			70-130	Pass		
Chromium	%	87			70-130	Pass		
Copper	%	89			70-130	Pass		
Iron	%	90			70-130	Pass		
Lead	%	89			70-130	Pass		
Manganese	%	91			70-130	Pass		
Mercury	%	85			70-130	Pass		
Nickel	%	90			70-130	Pass		
Selenium	%	89			70-130	Pass		
Zinc	%	106			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	103			70-130	Pass		
Magnesium	%	106			70-130	Pass		
Potassium	%	92			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M17-Fe21920	NCP	%	129		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Carbonate Alkalinity (as CaCO ₃)	M17-Fe21278	NCP	%	86		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Calcium	M17-Fe21455	CP	%	103		70-130	Pass	
Magnesium	M17-Fe21455	CP	%	103		70-130	Pass	
Potassium	M17-Fe21455	CP	%	89		70-130	Pass	
Sodium	M17-Fe21455	CP	%	101		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Total Alkalinity (as CaCO ₃)	M17-Fe21456	CP	%	101		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Fe21456	CP	%	81		70-130	Pass	
Arsenic	M17-Fe21456	CP	%	89		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	M17-Fe21456	CP	%	91			70-130	Pass	
Chromium	M17-Fe21456	CP	%	88			70-130	Pass	
Copper	M17-Fe21456	CP	%	89			70-130	Pass	
Iron	M17-Fe21456	CP	%	89			70-130	Pass	
Lead	M17-Fe21456	CP	%	88			70-130	Pass	
Manganese	M17-Fe21456	CP	%	89			70-130	Pass	
Mercury	M17-Fe21456	CP	%	88			70-130	Pass	
Nickel	M17-Fe21456	CP	%	89			70-130	Pass	
Selenium	M17-Fe21456	CP	%	85			70-130	Pass	
Zinc	M17-Fe21456	CP	%	88			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO4)	M17-Fe21459	CP	%	109			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Fe21465	CP	%	98			70-130	Pass	
Magnesium	M17-Fe21465	CP	%	99			70-130	Pass	
Potassium	M17-Fe21465	CP	%	88			70-130	Pass	
Sodium	M17-Fe21465	CP	%	96			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	M17-Fe21466	CP	%	121			70-130	Pass	
Total Alkalinity (as CaCO3)	M17-Fe21466	CP	%	121			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	M17-Fe21471	CP	%	76			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	M17-Fe21474	CP	%	77			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	M17-Fe21455	CP	mg/L	15	12	24	30%	Pass	
Conductivity (at 25°C)	M17-Fe21455	CP	uS/cm	1400	1400	1.0	30%	Pass	
pH	M17-Fe21455	CP	pH Units	7.5	7.5	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	M17-Fe21455	CP	mg/L	130	130	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	M17-Fe21455	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	M17-Fe21455	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	M17-Fe21455	CP	mg/L	130	130	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Fe21455	CP	mg/L	0.06	0.07	17	30%	Pass	
Arsenic	M17-Fe21455	CP	mg/L	0.002	0.002	9.0	30%	Pass	
Cadmium	M17-Fe21455	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Fe21455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M17-Fe21455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Fe21455	CP	mg/L	2.4	2.5	3.0	30%	Pass	
Lead	M17-Fe21455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Fe21455	CP	mg/L	0.066	0.060	11	30%	Pass	
Mercury	M17-Fe21455	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Fe21455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M17-Fe21455	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Fe21455	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe21455	CP	mg/L	74	73	<1	30%	Pass
Magnesium	M17-Fe21455	CP	mg/L	27	27	2.0	30%	Pass
Potassium	M17-Fe21455	CP	mg/L	6.4	6.3	1.0	30%	Pass
Sodium	M17-Fe21455	CP	mg/L	160	160	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	M17-Fe21456	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Fe21458	CP	mg/L	41	45	7.5	30%	Pass
Sulphate (as SO4)	M17-Fe21458	CP	mg/L	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	M17-Fe21459	CP	mg/L	1700	1700	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe21462	CP	uS/cm	680	680	<1	30%	Pass
pH	M17-Fe21462	CP	pH Units	4.2	4.3	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO3)	M17-Fe21462	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO3)	M17-Fe21462	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO3)	M17-Fe21462	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO3)	M17-Fe21462	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	M17-Fe21465	CP	mg/L	260	280	10	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Fe21465	CP	mg/L	46	45	4.0	30%	Pass
Arsenic	M17-Fe21465	CP	mg/L	0.001	0.002	9.0	30%	Pass
Cadmium	M17-Fe21465	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	M17-Fe21465	CP	mg/L	0.017	0.021	19	30%	Pass
Iron	M17-Fe21465	CP	mg/L	0.67	0.68	1.0	30%	Pass
Lead	M17-Fe21465	CP	mg/L	0.020	0.023	11	30%	Pass
Manganese	M17-Fe21465	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Fe21465	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Fe21465	CP	mg/L	0.012	0.012	1.0	30%	Pass
Selenium	M17-Fe21465	CP	mg/L	0.001	0.001	21	30%	Pass
Zinc	M17-Fe21465	CP	mg/L	0.016	0.022	31	30%	Fail
								Q15
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Fe21465	CP	mg/L	1.6	1.6	1.0	30%	Pass
Magnesium	M17-Fe21465	CP	mg/L	5.2	5.4	3.0	30%	Pass
Potassium	M17-Fe21465	CP	mg/L	1.4	1.3	6.0	30%	Pass
Sodium	M17-Fe21465	CP	mg/L	69	67	4.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Fe21466	CP	mg/L	0.05	0.05	13	30%	Pass
Nitrate & Nitrite (as N)	M17-Fe21466	CP	mg/L	0.71	0.70	1.0	30%	Pass
Nitrate (as N)	M17-Fe21466	CP	mg/L	0.71	0.70	1.0	30%	Pass
Nitrite (as N)	M17-Fe21466	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	B17-Fe21480	NCP	NTU	48	51	7.0	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Fe21470	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Dissolved Solids	M17-Fe21470	CP	mg/L	2000	2000	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Fe21472	CP	uS/cm	4000	3200	4.0	30%	Pass
pH	M17-Fe21472	CP	pH Units	5.9	5.9	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Fe21472	CP	mg/L	76	69	9.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Fe21472	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Fe21472	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Fe21472	CP	mg/L	76	69	9.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
M15	LOR raised due to physical properties of sample
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1701516**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : EN/007/14
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 15-Feb-2017 15:50
Date Analysis Commenced : 15-Feb-2017
Issue Date : 22-Feb-2017 14:42



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Ultra Trace ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- EA015H (Total Dissolved Solids): TDS for sample 'QC302' biasing low due to possible sample matrix interferences.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- Ionic Balance out of acceptable limits for sample 'QC300' due to analytes not quantified in this report.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC300	QC302	QC304	----	----
Client sampling date / time				15-Feb-2017 00:00	15-Feb-2017 00:00	15-Feb-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1701516-001	EP1701516-002	EP1701516-003	-----	-----	
				Result	Result	Result	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.22	6.97	6.54	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	534	253	630	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	330	134	356	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	1.8	42.2	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	110	30	16	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	110	30	16	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	18	3	10	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	24	77	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	45	48	147	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	68	11	22	----	----	
Magnesium	7439-95-4	1	mg/L	6	5	14	----	----	
Sodium	7440-23-5	1	mg/L	25	31	84	----	----	
Potassium	7440-09-7	1	mg/L	21	3	6	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	0.005	mg/L	0.073	0.053	0.114	----	----	
Arsenic	7440-38-2	0.0002	mg/L	0.0003	0.0004	0.0004	----	----	
Cadmium	7440-43-9	0.00005	mg/L	<0.00005	<0.00005	<0.00005	----	----	
Chromium	7440-47-3	0.0002	mg/L	0.0004	0.0004	0.0007	----	----	
Copper	7440-50-8	0.0005	mg/L	0.0013	0.0013	0.0012	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC300	QC302	QC304	----	----
Client sampling date / time				15-Feb-2017 00:00	15-Feb-2017 00:00	15-Feb-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1701516-001	EP1701516-002	EP1701516-003	-----	-----	
				Result	Result	Result	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	0.002	mg/L	0.009	0.125	0.251	----	----	
Lead	7439-92-1	0.0001	mg/L	<0.0001	0.0009	0.0001	----	----	
Manganese	7439-96-5	0.0005	mg/L	<0.0005	0.0105	0.0145	----	----	
Nickel	7440-02-0	0.0005	mg/L	<0.0005	0.0007	0.0007	----	----	
Selenium	7782-49-2	0.0002	mg/L	0.0002	<0.0002	<0.0002	----	----	
Zinc	7440-66-6	0.001	mg/L	0.004	0.029	0.012	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	0.005	mg/L	0.217	0.077	0.519	----	----	
Arsenic	7440-38-2	0.0002	mg/L	0.0003	0.0005	0.0010	----	----	
Cadmium	7440-43-9	0.00005	mg/L	<0.00005	<0.00005	<0.00005	----	----	
Chromium	7440-47-3	0.0002	mg/L	0.0006	0.0005	0.0015	----	----	
Copper	7440-50-8	0.0005	mg/L	0.0015	0.0016	0.0028	----	----	
Iron	7439-89-6	0.002	mg/L	0.031	0.163	4.55	----	----	
Lead	7439-92-1	0.0001	mg/L	0.0002	0.0012	0.0021	----	----	
Manganese	7439-96-5	0.0005	mg/L	<0.0005	0.0118	0.0160	----	----	
Selenium	7782-49-2	0.0002	mg/L	0.0003	<0.0002	<0.0002	----	----	
Nickel	7440-02-0	0.0005	mg/L	<0.0005	0.0008	0.0009	----	----	
Zinc	7440-66-6	0.001	mg/L	0.005	0.031	0.021	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.07	0.14	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	0.02	<0.01	<0.01	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	16.5	0.17	0.07	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	16.5	0.17	0.07	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	0.4	0.6	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	18.5	0.6	0.7	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.08	0.04	0.05	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	<0.01	<0.01	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC300	QC302	QC304	----	----
Client sampling date / time				15-Feb-2017 00:00	15-Feb-2017 00:00	15-Feb-2017 00:00	----	----	
Compound	CAS Number	LOR	Unit	EP1701516-001	EP1701516-002	EP1701516-003	-----	-----	
				Result	Result	Result	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	4.30	2.45	6.07	----	----	
Total Cations	----	0.01	meq/L	5.51	2.38	6.06	----	----	
Ionic Balance	----	0.01	%	12.3	----	0.10	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	2600	1300	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	2600	1300	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1701516	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 15-Feb-2017
Order number	: ----	Date Analysis Commenced	: 15-Feb-2017
C-O-C number	: ----	Issue Date	: 22-Feb-2017
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 3		
No. of samples analysed	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 757743)									
EP1701506-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.27	7.28	0.137	0% - 20%
EP1701518-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	3.41	3.37	1.18	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 757740)									
EP1701506-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	101000	102000	0.896	0% - 20%
EP1701500-011	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	35400	35400	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 757846)									
EP1701463-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	230	237	3.00	0% - 20%
EP1701463-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	164	154	5.98	0% - 50%
EA045: Turbidity (QC Lot: 757832)									
EP1701516-002	QC302	EA045: Turbidity	----	0.1	NTU	1.8	1.8	0.00	0% - 50%
EP1701526-002	Anonymous	EA045: Turbidity	----	0.1	NTU	0.1	0.1	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 757741)									
EP1701506-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	168	185	9.78	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	168	185	9.78	0% - 20%
EP1701500-011	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	45	40	13.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	45	40	13.0	0% - 20%
ED038A: Acidity (QC Lot: 760981)									
EP1701492-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	14	13	0.00	0% - 50%
EP1701516-003	QC304	ED038: Acidity as CaCO3	----	1	mg/L	10	8	0.00	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 756395)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 756395) - continued									
EP1701516-001	QC300	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	40	38	3.35	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 756396)									
EP1701516-001	QC300	ED045G: Chloride	16887-00-6	1	mg/L	45	44	2.51	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 758680)									
EP1701501-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	10	10	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	8	8	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	20	19	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	4	4	0.00	No Limit
EP1701523-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	2	2	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	68	67	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	7	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 758970)									
EP1701498-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1701516-003	QC304	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 758789)									
EP1701516-001	QC300	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1703555-004	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 760432)									
EP1701516-001	QC300	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.0003	0.3	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.0004	0.4	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.0013	1.3	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	0.004	4	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	0.073	73	0.00	0% - 50%
EP1701535-002	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.0002	0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.0003	0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.0012	1.2	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	0.0008	0.7	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<0.001	<1	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	0.147	143	2.45	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 760433)									
EP1701516-001	QC300	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.0002	0.3	0.00	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 760433) - continued									
EP1701516-001	QC300	EG094B-F: Iron	7439-89-6	2	µg/L	0.009	8	0.00	No Limit
EP1701535-002	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	0.108	104	3.53	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 760452)									
EP1701516-001	QC300	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	0.0002	0.2	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	0.0003	0.3	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	0.0006	0.6	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	0.0015	1.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	0.005	5	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	0.217	222	2.04	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 760453)									
ES1703648-009	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.0006	0.7	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	0.791	833	5.14	0% - 20%
EP1701516-001	QC300	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.0003	0.3	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	0.031	32	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 756401)									
EP1701516-001	QC300	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.04	0.04	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 756394)									
EP1701516-001	QC300	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 756402)									
EP1701516-001	QC300	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	16.5	16.2	1.59	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 757553)									
EP1701516-001	QC300	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	2.5	19.5	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 757552)									
EP1701516-001	QC300	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.08	0.11	30.9	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 756393)									
EP1701516-001	QC300	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.07	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 757743)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 757740)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	103	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 757846)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	91.0	83	111	
				<10	1000 mg/L	104	70	130	
EA045: Turbidity (QCLot: 757832)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	105	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 757741)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	105	76	126	
				<1	200 mg/L	99.1	90	106	
ED038A: Acidity (QCLot: 760981)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	99.8	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 756395)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	105	89	113	
				<1	100 mg/L	90.0	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 756396)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	116	84	120	
				<1	1000 mg/L	104	84	110	
ED093F: Dissolved Major Cations (QCLot: 758680)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.8	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	101	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	100	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	100	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 758970)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	96.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 758789)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	100	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 760432)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	93.4	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	94.2	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.7	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	88.3	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	88.4	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	90.3	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	91.0	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	89.6	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	93.1	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 760433)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	91.6	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	92.4	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 760452)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	97.8	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.6	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.9	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	93.6	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	93.6	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	89.8	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	90.3	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	97.7	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	97.8	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 760453)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	94.6	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	95.6	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 756401)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	106	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 756394)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	102	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 756402)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	98.9	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 757553)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	87.1	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 757552)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	86.6	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 756393)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	109	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 756395)							
EP1701516-002	QC302	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	93.2	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 756396)							
EP1701516-002	QC302	ED045G: Chloride	16887-00-6	1000 mg/L	106	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 758970)							
EP1701498-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	86.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 758789)							
EP1701516-002	QC302	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	90.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 760432)							
EP1701516-002	QC302	EG094A-F: Arsenic	7440-38-2	50 µg/L	94.8	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	91.4	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	89.0	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	91.4	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	90.2	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	91.6	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	90.8	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	90.5	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 760452)							
EP1701516-002	QC302	EG094A-T: Arsenic	7440-38-2	50 µg/L	98.7	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	89.2	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	93.2	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	96.8	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	90.5	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	92.0	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	96.0	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	91.6	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 756401)							
EP1701516-002	QC302	EK055G: Ammonia as N	7664-41-7	1 mg/L	91.8	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 756394)							
EP1701516-002	QC302	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	107	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 756402)							
EP1701516-002	QC302	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	98.0	70	130

Page : 8 of 8
 Work Order : EP1701516
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 757553)							
EP1701516-001	QC300	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	90.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 757552)							
EP1701516-001	QC300	EK067G: Total Phosphorus as P	----	1 mg/L	88.8	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 756393)							
EP1701516-002	QC302	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	114	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1701516	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 15-Feb-2017
Site	: ----	Issue Date	: 22-Feb-2017
Sampler	: HARRIET CARTER	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis			
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue	
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural QC300, QC304	QC302,	----	----	----	16-Feb-2017	15-Feb-2017	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) QC300, QC304	QC302,	15-Feb-2017	----	----	----	16-Feb-2017	15-Feb-2017	*
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P) QC300, QC304	QC302,	15-Feb-2017	----	----	----	16-Feb-2017	15-Mar-2017	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) QC300, QC304	QC302,	15-Feb-2017	----	----	----	16-Feb-2017	22-Feb-2017	✓
EA045: Turbidity								
Clear Plastic Bottle - Natural (EA045) QC302,	QC304	15-Feb-2017	----	----	----	16-Feb-2017	17-Feb-2017	✓
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) QC300, QC304	QC302,	15-Feb-2017	----	----	----	16-Feb-2017	01-Mar-2017	✓
ED038A: Acidity								
Clear Plastic Bottle - Natural (ED038) QC300, QC304	QC302,	15-Feb-2017	----	----	----	20-Feb-2017	01-Mar-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) QC300, QC304	QC302,	15-Feb-2017	----	----	----	15-Feb-2017	15-Mar-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) QC300, QC304	QC302,	15-Feb-2017	----	----	----	15-Feb-2017	15-Mar-2017	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) QC300, QC304	QC302,	15-Feb-2017	----	----	----	17-Feb-2017	22-Feb-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC300, QC304	QC304	15-Feb-2017	----	----	----	17-Feb-2017	15-Mar-2017	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035F-LL) QC302		15-Feb-2017	----	----	----	17-Feb-2017	15-Mar-2017	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC300, QC304	QC302,	15-Feb-2017	----	----	----	20-Feb-2017	15-Mar-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC300, QC304	QC302,	15-Feb-2017	----	----	----	20-Feb-2017	14-Aug-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC300, QC304	QC302,	15-Feb-2017	20-Feb-2017	14-Aug-2017	✓	20-Feb-2017	14-Aug-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC300, QC304	QC302,	15-Feb-2017	----	----	----	15-Feb-2017	15-Mar-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC300, QC304	QC302,	15-Feb-2017	----	----	----	15-Feb-2017	17-Feb-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC300, QC304	QC302,	15-Feb-2017	----	----	----	15-Feb-2017	15-Mar-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC300, QC304	QC302, QC304	15-Feb-2017	17-Feb-2017	15-Mar-2017	✓	17-Feb-2017	15-Mar-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC300, QC304	QC302, QC304	15-Feb-2017	17-Feb-2017	15-Mar-2017	✓	17-Feb-2017	15-Mar-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC300, QC304	QC302, QC304	15-Feb-2017	----	----	----	15-Feb-2017	17-Feb-2017	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC302,	QC304	15-Feb-2017	----	----	----	16-Feb-2017	16-Feb-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1701583**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : EN/007/14
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 16-Feb-2017 15:20
Date Analysis Commenced : 16-Feb-2017
Issue Date : 23-Feb-2017 17:40



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Ultra Trace ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG035: Positive Hg results have been confirmed by reanalysis.
- MF = membrane filtration
- CFU = colony forming unit
- EK057G (Nitrite): Poor Nitrite spike recoveries due to sample matrix effects. Confirmed by re-extraction and re-analysis.
- EA015H (Total Dissolved Solids): TDS for samples 'QC310' and 'QC311' biasing low due to possible sample matrix interferences.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC308	QC309	QC310	QC311	----
Client sampling date / time				16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	----	
Compound	CAS Number	LOR	Unit	EP1701583-001	EP1701583-002	EP1701583-003	EP1701583-004	-----	
				Result	Result	Result	Result	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.90	7.37	7.97	7.67	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	481	3000	2420	1760	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	346	1800	1280	951	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	81.4	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	40	232	254	201	----	
Total Alkalinity as CaCO3	----	1	mg/L	40	232	254	201	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	12	19	7	16	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	41	103	17	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	119	880	640	487	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	22	108	59	67	----	
Magnesium	7439-95-4	1	mg/L	9	71	48	40	----	
Sodium	7440-23-5	1	mg/L	62	458	457	272	----	
Potassium	7440-09-7	1	mg/L	15	8	5	6	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00006	<0.00004	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	0.005	mg/L	0.244	0.008	0.008	0.007	----	
Arsenic	7440-38-2	0.0002	mg/L	0.0020	0.0003	0.0017	0.0003	----	
Cadmium	7440-43-9	0.00005	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	----	
Chromium	7440-47-3	0.0002	mg/L	0.0012	0.0008	<0.0002	0.0007	----	
Copper	7440-50-8	0.0005	mg/L	0.0007	<0.0005	<0.0005	<0.0005	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC308	QC309	QC310	QC311	----
Client sampling date / time				16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	----	
Compound	CAS Number	LOR	Unit	EP1701583-001	EP1701583-002	EP1701583-003	EP1701583-004	-----	
				Result	Result	Result	Result	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	0.002	mg/L	1.56	0.242	0.034	0.024	----	
Lead	7439-92-1	0.0001	mg/L	0.0002	<0.0001	<0.0001	<0.0001	----	
Manganese	7439-96-5	0.0005	mg/L	0.0232	0.0210	0.0116	0.0042	----	
Nickel	7440-02-0	0.0005	mg/L	0.0008	<0.0005	0.0012	<0.0005	----	
Selenium	7782-49-2	0.0002	mg/L	0.0002	0.0003	0.0023	0.0002	----	
Zinc	7440-66-6	0.001	mg/L	0.002	0.002	0.010	<0.001	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	0.005	mg/L	1.89	3.26	19.6	6.07	----	
Arsenic	7440-38-2	0.0002	mg/L	0.0028	0.0015	0.0132	0.0088	----	
Cadmium	7440-43-9	0.00005	mg/L	<0.00005	<0.00005	0.00006	<0.00005	----	
Chromium	7440-47-3	0.0002	mg/L	0.0051	0.0069	0.0362	0.0097	----	
Copper	7440-50-8	0.0005	mg/L	0.0046	0.0046	0.0054	0.0016	----	
Iron	7439-89-6	0.002	mg/L	3.66	5.23	11.7	12.5	----	
Lead	7439-92-1	0.0001	mg/L	0.0024	0.0029	0.0165	0.0059	----	
Manganese	7439-96-5	0.0005	mg/L	0.0322	0.0264	0.0267	0.0061	----	
Selenium	7782-49-2	0.0002	mg/L	0.0005	0.0017	0.0063	0.0014	----	
Nickel	7440-02-0	0.0005	mg/L	0.0015	0.0041	0.0194	0.0082	----	
Zinc	7440-66-6	0.001	mg/L	0.020	0.060	0.052	0.027	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.14	0.55	0.30	0.35	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.56	<0.01	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	0.19	<0.01	1.39	<0.01	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	0.19	<0.01	1.95	<0.01	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.1	1.3	0.9	0.6	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	3.3	1.3	2.8	0.6	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	1.05	0.14	0.13	0.15	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.74	0.06	0.12	0.10	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC308	QC309	QC310	QC311	----
Client sampling date / time				16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	16-Feb-2017 00:00	----	
Compound	CAS Number	LOR	Unit	EP1701583-001	EP1701583-002	EP1701583-003	EP1701583-004	-----	
				Result	Result	Result	Result	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	4.70	30.3	25.3	18.1	----	
Total Cations	----	0.01	meq/L	4.92	31.4	26.9	18.6	----	
Ionic Balance	----	0.01	%	2.30	1.70	3.12	1.40	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	1300	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	1300	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1701583	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 16-Feb-2017
Order number	: ----	Date Analysis Commenced	: 16-Feb-2017
C-O-C number	: ----	Issue Date	: 23-Feb-2017
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 4		
No. of samples analysed	: 4		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 759264)									
EP1701575-011	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.64	5.55	1.61	0% - 20%
EP1701586-003	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.64	7.62	0.262	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 759265)									
EP1701575-011	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3	<1	91.9	No Limit
EP1701586-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2560	2600	1.52	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 762500)									
EP1701551-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	33	29	12.9	No Limit
EP1701551-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	26	22	16.7	No Limit
EA045: Turbidity (QC Lot: 759531)									
EP1701436-001	Anonymous	EA045: Turbidity	----	0.1	NTU	6.4	6.5	2.63	0% - 20%
EP1701579-009	Anonymous	EA045: Turbidity	----	0.1	NTU	0.3	0.3	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 759263)									
EP1701571-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
EP1701586-003	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	140	140	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	140	140	0.00	0% - 20%
ED038A: Acidity (QC Lot: 764280)									
EP1701583-001	QC308	ED038: Acidity as CaCO3	----	1	mg/L	12	13	0.00	0% - 50%
EP1701667-002	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	30	28	6.45	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 757993)									



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 757993) - continued									
EP1701583-001	QC308	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	24	5.03	0% - 20%
EP1701583-004	QC311	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	17	17	0.00	0% - 50%
ED045G: Chloride by Discrete Analyser (QC Lot: 757992)									
EP1701583-001	QC308	ED045G: Chloride	16887-00-6	1	mg/L	119	120	0.00	0% - 20%
EP1701583-004	QC311	ED045G: Chloride	16887-00-6	1	mg/L	487	489	0.394	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 762377)									
EP1701551-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	2	2	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	1	1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	62	63	1.91	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
EP1701609-003	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	701	696	0.773	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	2850	2900	1.81	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	24900	24900	0.241	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	558	573	2.65	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 764205)									
EP1701471-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 764206)									
EP1701471-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 764027)									
ES1703879-012	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001	0.2	83.2	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.0002	1.1	140	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.0005	0.7	38.8	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.0005	0.8	44.8	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	0.001	2	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	<0.005	<5	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 764028)									
ES1703879-012	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.0002	0.3	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	<0.002	<2	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 764034)									
ES1703879-012	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.00005	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.0001	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.0005	<0.5	0.00	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.0005	<0.5	0.00	No Limit

Page : 4 of 8
 Work Order : EP1701583
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 764034) - continued									
ES1703879-012	Anonymous	EG094A-T: Zinc	7440-66-6	1	µg/L	<0.001	<1	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	<0.005	11	76.8	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 764039)									
ES1703879-012	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.0002	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	<0.002	<2	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 758031)									
EP1701523-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1701590-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.08	0.08	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 757991)									
EP1701583-001	QC308	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1701583-004	QC311	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 758032)									
EP1701523-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	8.33	8.66	3.85	0% - 20%
EP1701590-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.06	91.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 758831)									
EP1701583-001	QC308	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.1	3.2	0.00	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 758830)									
EP1701583-001	QC308	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.05	1.06	0.00	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 757994)									
EP1701583-001	QC308	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.74	0.74	0.00	0% - 20%
EP1701583-004	QC311	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.10	0.10	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 759264)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 759265)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	98.5	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 762500)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	85.0	83	111	
				<10	1000 mg/L	102	70	130	
EA045: Turbidity (QCLot: 759531)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	104	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 759263)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	110	76	126	
				<1	200 mg/L	97.8	90	106	
ED038A: Acidity (QCLot: 764280)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	104	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 757993)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.2	89	113	
				<1	100 mg/L	90.8	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 757992)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	84	120	
				<1	1000 mg/L	99.2	84	110	
ED093F: Dissolved Major Cations (QCLot: 762377)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.8	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	103	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.8	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 764205)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	96.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 764206)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	96.0	85	105	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 764027)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	103	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	103	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.6	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	99.9	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	102	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	103	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	101	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	106	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 764028)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	102	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	100	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 764034)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	110	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	104	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	100	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	103	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	104	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	99.8	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	106	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	128	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 764039)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	109	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	103	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 758031)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	106	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 757991)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 758032)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 758831)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	89.5	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 758830)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	90.3	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 757994)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	107	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 757993)							
EP1701583-002	QC309	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	108	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 757992)							
EP1701523-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	103	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 764205)							
EP1701471-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	90.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 764206)							
EP1701471-002	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	81.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 764027)							
EP1701583-002	QC309	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	97.3	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	102	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	101	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	98.6	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	103	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	103	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 764034)							
EP1701583-002	QC309	EG094A-T: Arsenic	7440-38-2	50 µg/L	118	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	107	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	96.3	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	106	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	100	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	98.1	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	104	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	100.0	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 758031)							
EP1701523-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	75.8	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 757991)							
EP1701523-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	# 49.9	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 758032)							
EP1701523-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130

Page : 8 of 8
 Work Order : EP1701583
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 758831)							
EP1701583-001	QC308	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	90.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 758830)							
EP1701583-001	QC308	EK067G: Total Phosphorus as P	----	1 mg/L	87.3	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 757994)							
EP1701583-002	QC309	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	114	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1701583	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 16-Feb-2017
Site	: ----	Issue Date	: 23-Feb-2017
Sampler	: HARRIET CARTER	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK057G: Nitrite as N by Discrete Analyser	EP1701523--001	Anonymous	Nitrite as N	14797-65-0	49.9 %	70-130%	Recovery less than lower data quality objective
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1701523--002	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
QC308,	QC309,	----	----	----	17-Feb-2017	16-Feb-2017	1
QC310,	QC311						

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
QC308,	16-Feb-2017	QC309,	----	----	----	17-Feb-2017	16-Feb-2017	✖
QC310,		QC311						
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P)								
QC308,	16-Feb-2017	QC309,	----	----	----	17-Feb-2017	16-Mar-2017	✔
QC310,		QC311						
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
QC308,	16-Feb-2017	QC309,	----	----	----	21-Feb-2017	23-Feb-2017	✔
QC310,		QC311						



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045) QC308	16-Feb-2017	----	----	----	17-Feb-2017	18-Feb-2017	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	17-Feb-2017	02-Mar-2017	✓
ED038A: Acidity							
Clear Plastic Bottle - Natural (ED038) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	22-Feb-2017	02-Mar-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	16-Mar-2017	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	16-Mar-2017	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	21-Feb-2017	23-Feb-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC308	16-Feb-2017	----	----	----	22-Feb-2017	16-Mar-2017	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035F-LL) QC309, QC310, QC311	16-Feb-2017	----	----	----	22-Feb-2017	16-Mar-2017	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	22-Feb-2017	16-Mar-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC308, QC310, QC309, QC311	16-Feb-2017	----	----	----	22-Feb-2017	15-Aug-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC308, QC310, QC309, QC311	16-Feb-2017	22-Feb-2017	15-Aug-2017	✓	22-Feb-2017	15-Aug-2017	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC308, QC310,	QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	16-Mar-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC308, QC310,	QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	18-Feb-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC308, QC310,	QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	16-Mar-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC308, QC310,	QC309, QC311	16-Feb-2017	20-Feb-2017	16-Mar-2017	✓	21-Feb-2017	16-Mar-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC308, QC310,	QC309, QC311	16-Feb-2017	20-Feb-2017	16-Mar-2017	✓	21-Feb-2017	16-Mar-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC308, QC310,	QC309, QC311	16-Feb-2017	----	----	----	16-Feb-2017	18-Feb-2017	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC308		16-Feb-2017	----	----	----	16-Feb-2017	17-Feb-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1701667**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : EN/007/14
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Biagioni
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7655
Date Samples Received : 20-Feb-2017 17:05
Date Analysis Commenced : 20-Feb-2017
Issue Date : 27-Feb-2017 17:28



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG035: Positive Hg results have been confirmed by reanalysis
- MF = membrane filtration
- CFU = colony forming unit
- EK059G (Nitrite plus Nitrate as N (NOx) by Discrete Analyser): LOR has been raised for sample 'QC320' due to possible sample matrix interference.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC320	QC318	----	----	----
Client sampling date / time				20-Feb-2017 00:00	20-Feb-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1701667-001	EP1701667-002	-----	-----	-----	
				Result	Result	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.90	6.26	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2050	8450	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1300	5250	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	220	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	53	28	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	53	28	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	18	30	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	64	163	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	656	2850	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	27	30	----	----	----	
Magnesium	7439-95-4	1	mg/L	45	177	----	----	----	
Sodium	7440-23-5	1	mg/L	272	1440	----	----	----	
Potassium	7440-09-7	1	mg/L	17	47	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.00015	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	91	<5	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	2.8	1.7	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----	
Chromium	7440-47-3	0.2	µg/L	1.0	0.5	----	----	----	
Copper	7440-50-8	0.5	µg/L	0.7	<0.5	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC320	QC318	----	----	----
Client sampling date / time				20-Feb-2017 00:00	20-Feb-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1701667-001	EP1701667-002	-----	-----	-----	
				Result	Result	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	2710	3260	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.2	0.4	----	----	----	
Manganese	7439-96-5	0.5	µg/L	232	16.2	----	----	----	
Nickel	7440-02-0	0.5	µg/L	3.8	2.0	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.4	0.3	----	----	----	
Zinc	7440-66-6	1	µg/L	9	10	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	408	8470	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	3.5	3.8	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	0.06	----	----	----	
Chromium	7440-47-3	0.2	µg/L	1.7	23.9	----	----	----	
Copper	7440-50-8	0.5	µg/L	1.4	5.5	----	----	----	
Iron	7439-89-6	2	µg/L	6860	5360	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.5	32.6	----	----	----	
Manganese	7439-96-5	0.5	µg/L	250	16.6	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.5	1.1	----	----	----	
Nickel	7440-02-0	0.5	µg/L	4.6	3.6	----	----	----	
Zinc	7440-66-6	1	µg/L	10	14	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.60	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.05	0.06	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.05	0.06	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	45.5	0.8	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	45.5	0.9	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	4.71	0.15	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.38	0.02	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC320	QC318	----	----	----
Client sampling date / time				20-Feb-2017 00:00	20-Feb-2017 00:00	----	----	----	
Compound	CAS Number	LOR	Unit	EP1701667-001	EP1701667-002	-----	-----	-----	
				Result	Result	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	20.9	84.3	----	----	----	
Total Cations	----	0.01	meq/L	17.3	79.9	----	----	----	
Ionic Balance	----	0.01	%	9.37	2.71	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	12000	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	12000	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1701667	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Biagioni
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 20-Feb-2017
Order number	: ----	Date Analysis Commenced	: 20-Feb-2017
C-O-C number	: ----	Issue Date	: 27-Feb-2017
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 2		
No. of samples analysed	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
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General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 763315)									
EP1701666-009	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	1.30	1.33	2.28	0% - 20%
EP1701667-002	QC318	EA005-P: pH Value	----	0.01	pH Unit	6.26	6.24	0.320	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 763313)									
EP1701659-005	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	5330	5320	0.184	0% - 20%
EP1701657-015	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1050	1020	2.51	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 763316)									
EP1701667-002	QC318	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	8450	8430	0.233	0% - 20%
EP1701684-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3530	3560	0.832	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 765882)									
EP1701629-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	337	335	0.595	0% - 20%
EP1701655-002	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	64400	65500	1.76	0% - 20%
EA045: Turbidity (QC Lot: 761981)									
EP1701667-001	QC320	EA045: Turbidity	----	0.1	NTU	220	229	4.01	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 763314)									
EP1701657-015	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	271	278	2.52	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	271	278	2.52	0% - 20%
EP1701667-002	QC318	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	28	28	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	28	28	0.00	0% - 20%
ED038A: Acidity (QC Lot: 764280)									
EP1701583-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	12	13	0.00	0% - 50%



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED038A: Acidity (QC Lot: 764280) - continued									
EP1701667-002	QC318	ED038: Acidity as CaCO3	----	1	mg/L	30	28	6.45	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 761966)									
EP1701667-002	QC318	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	163	166	2.01	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 761967)									
EP1701667-002	QC318	ED045G: Chloride	16887-00-6	1	mg/L	2850	2840	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 765770)									
EP1701629-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	4	4	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	7	7	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	52	52	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	3	3	0.00	No Limit
EP1701638-005	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	318	294	7.75	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	28	26	7.70	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	30	29	6.51	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	7	6	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 764919)									
EP1701664-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
ES1704031-007	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 764918)									
EP1701648-002	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 765837)									
ES1704114-003	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	72	78	7.02	0% - 20%
ES1704114-002	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	94	100	5.87	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 765838)									
ES1704114-003	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	3.2	3.0	0.00	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	16.3	17.0	3.95	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	32	35	8.77	No Limit
ES1704114-002	Anonymous	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	16.8	15.7	7.18	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.4	0.5	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	0.9	0.7	20.3	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 765838) - continued									
ES1704114-002	Anonymous	EG094A-F: Manganese	7439-96-5	0.5	µg/L	53.6	55.6	3.66	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.6	0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	29	32	8.67	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 765841)									
ES1704114-002	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	17.0	16.4	3.49	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	0.9	1.0	10.9	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	153	154	0.329	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	0.6	<0.5	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
ES1704114-008	Anonymous	EG094A-T: Aluminium	7429-90-5	5	µg/L	177	181	1.95	0% - 20%
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
ES1704114-008	Anonymous	EG094A-T: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	<5	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 765842)									
ES1704114-002	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	329	334	1.56	0% - 20%
ES1704114-008	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	<2	<2	0.00	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 761974)									
EP1701667-002	QC318	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.60	0.56	7.03	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 761968)									
EP1701667-002	QC318	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 761975)									
EP1701667-002	QC318	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.05	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 764730)									
EP1701671-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.3	91.8	No Limit
EP1701673-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.6	4.3	6.02	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 764731)									
EP1701671-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.20	0.24	17.5	0% - 20%

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 Work Order : EP1701667
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 764731) - continued									
EP1701673-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.02	48.8	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 761965)									
EP1701667-002	QC318	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.02	0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 763315)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	99	102	
				----	7 pH Unit	99.8	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 763313)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.9	95	105	
EA010P: Conductivity by PC Titrator (QCLot: 763316)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.9	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 765882)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	84.8	83	111	
				<10	1000 mg/L	82.2	70	130	
EA045: Turbidity (QCLot: 761981)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	104	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 763314)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	104	76	126	
				<1	200 mg/L	98.0	90	106	
ED038A: Acidity (QCLot: 764280)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	104	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 761966)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	102	89	113	
				<1	100 mg/L	99.2	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 761967)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	102	84	120	
				<1	1000 mg/L	99.5	84	110	
ED093F: Dissolved Major Cations (QCLot: 765770)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.7	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	94.6	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	94.7	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.8	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 764919)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	97.0	83	105	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG035T: Total Mercury by FIMS (QCLot: 764918)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	96.0	85	105	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 765837)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	103	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	97.3	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 765838)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	110	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	106	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	104	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.4	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	97.1	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	105	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	105	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	97.6	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	110	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 765841)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	121	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	113	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	110	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	113	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	107	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	111	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	112	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	129	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 765842)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	122	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	106	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 761974)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	102	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 761968)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	103	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 761975)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 764730)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	85.4	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 764731)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	85.2	70	130	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 761965)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	112	87	115

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%) Low High	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 761966)							
EP1701667-001	QC320	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	96.5	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 761967)							
EP1701667-001	QC320	ED045G: Chloride	16887-00-6	1000 mg/L	89.8	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 764919)							
EP1701664-003	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	90.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 764918)							
EP1701648-003	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	86.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 765838)							
ES1704114-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	110	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	109	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	101	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	100	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	106	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	108	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	101	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	106	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 765841)							
ES1704114-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	106	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	103	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	102	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	104	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	105	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	100	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	101	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	96.7	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 761974)							
EP1701667-001	QC320	EK055G: Ammonia as N	7664-41-7	1 mg/L	79.6	70	130

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 Work Order : EP1701667
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK057G: Nitrite as N by Discrete Analyser (QCLot: 761968)							
EP1701667-001	QC320	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	99.3	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 761975)							
EP1701667-001	QC320	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	89.4	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 764730)							
EP1701671-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	91.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 764731)							
EP1701671-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	86.1	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 761965)							
EP1701667-001	QC320	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	96.9	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1701667	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7655
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 20-Feb-2017
Site	: ----	Issue Date	: 27-Feb-2017
Sampler	: HARRIET CARTER	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle - Unpreserved	QC320,	QC318	----	----	21-Feb-2017	20-Feb-2017	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis				
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator									
Miscellaneous Plastic bottle - Unpreserved (EA005-P)	QC320,	QC318	20-Feb-2017	----	----	----	21-Feb-2017	20-Feb-2017	✖
EA010P: Conductivity by PC Titrator									
Miscellaneous Plastic bottle - Unpreserved (EA010-P)	QC320,	QC318	20-Feb-2017	----	----	----	21-Feb-2017	20-Mar-2017	✔
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Miscellaneous Plastic bottle - Unpreserved (EA015H)	QC320,	QC318	20-Feb-2017	----	----	----	23-Feb-2017	27-Feb-2017	✔
EA045: Turbidity									
Miscellaneous Plastic bottle - Unpreserved (EA045)	QC320		20-Feb-2017	----	----	----	20-Feb-2017	22-Feb-2017	✔
ED037P: Alkalinity by PC Titrator									
Miscellaneous Plastic bottle - Unpreserved (ED037-P)	QC320,	QC318	20-Feb-2017	----	----	----	21-Feb-2017	06-Mar-2017	✔
ED038A: Acidity									
Miscellaneous Plastic bottle - Unpreserved (ED038)	QC320,	QC318	20-Feb-2017	----	----	----	22-Feb-2017	06-Mar-2017	✔
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Miscellaneous Plastic bottle - Unpreserved (ED041G)	QC320,	QC318	20-Feb-2017	----	----	----	20-Feb-2017	20-Mar-2017	✔



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (ED045G) QC320, QC318	20-Feb-2017	----	----	----	20-Feb-2017	20-Mar-2017	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle - Unpreserved (ED093F) QC320, QC318	20-Feb-2017	----	----	----	23-Feb-2017	27-Feb-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC320	20-Feb-2017	----	----	----	22-Feb-2017	20-Mar-2017	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035F-LL) QC318	20-Feb-2017	----	----	----	22-Feb-2017	20-Mar-2017	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC320, QC318	20-Feb-2017	----	----	----	23-Feb-2017	20-Mar-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC320	20-Feb-2017	----	----	----	23-Feb-2017	19-Aug-2017	✓
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-F) QC318	20-Feb-2017	----	----	----	23-Feb-2017	19-Aug-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC320, QC318	20-Feb-2017	23-Feb-2017	19-Aug-2017	✓	23-Feb-2017	19-Aug-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC320, QC318	20-Feb-2017	----	----	----	20-Feb-2017	20-Mar-2017	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (EK057G) QC320, QC318	20-Feb-2017	----	----	----	20-Feb-2017	22-Feb-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC320, QC318	20-Feb-2017	----	----	----	20-Feb-2017	20-Mar-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC320, QC318	20-Feb-2017	23-Feb-2017	20-Mar-2017	✓	23-Feb-2017	20-Mar-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC320, QC318	20-Feb-2017	23-Feb-2017	20-Mar-2017	✓	23-Feb-2017	20-Mar-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle - Unpreserved (EK071G) QC320, QC318	20-Feb-2017	----	----	----	20-Feb-2017	22-Feb-2017	✓

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 Work Order : EP1701667
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC320	20-Feb-2017	----	----	----	21-Feb-2017	21-Feb-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	3	66.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 13, 2017 2:01 PM**
Eurofins | mgt reference: **537669**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA
Address: Suite 2, 53 Burswood Road
Burswood
WA 6100
Project Name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA

Order No.:
Report #: 537669
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Mar 13, 2017 2:01 PM
Due: Mar 20, 2017
Priority: 5 Day
Contact Name: Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail	Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Magnesium (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271	X							X				X			X											X	X	X						X	X				X	X		
Sydney Laboratory - NATA Site # 18217		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X	X	X	X					X	X					
Brisbane Laboratory - NATA Site # 20794																																										
Perth Laboratory - NATA Site # 18217																																										
Test Counts	7	7	9	7	9	7	9	7	7	7	9	7	7	9	3	7	9	7	9	7	7	9	7	9	7	9	7	7	7	7	7	9	7	7	3	7	3	7	9	7	7	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **537669-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Mar 13, 2017

Client Sample ID			MW6 Water P17-Ma12744 Mar 13, 2017	MW7 Water P17-Ma12745 Mar 13, 2017	MW8 Water P17-Ma12746 Mar 13, 2017	SWL4_1 Water P17-Ma12747 Mar 13, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	98	49	16	13
Ammonia (as N)	0.01	mg/L	0.17	0.02	0.03	0.03
Chloride	1	mg/L	88	11	17	48
Conductivity (at 25°C)	1	uS/cm	610	140	100	280
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.3	2.9	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	2.3	2.9	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.5	0.6	0.8
pH	0.1	pH Units	5.1	4.7	5.6	6.3
Phosphate total (as P)	0.05	mg/L	< 0.05	0.05	0.12	0.18
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	140	26	< 5	25
Total Dissolved Solids	10	mg/L	350	94	99	170
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.5	0.6	0.8
Total Nitrogen (as N)	0.2	mg/L	0.7	2.8	3.5	0.8
Turbidity	1	NTU	-	-	-	25
E.coli	1	MPN/100mL	-	-	-	11000
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	>24000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	21
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	21
Heavy Metals						
Aluminium	0.05	mg/L	1.3	5.2	4.3	0.85
Aluminium (filtered)	0.05	mg/L	0.80	0.93	0.25	0.05
Arsenic	0.001	mg/L	< 0.001	0.003	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.006	0.007	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.007	0.007
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.002
Iron	0.05	mg/L	0.60	6.1	0.49	5.6

Client Sample ID			MW6	MW7	MW8	SWL4_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma12744	P17-Ma12745	P17-Ma12746	P17-Ma12747
Date Sampled			Mar 13, 2017	Mar 13, 2017	Mar 13, 2017	Mar 13, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Iron (filtered)	0.05	mg/L	0.39	0.14	0.09	0.16
Lead	0.001	mg/L	< 0.001	0.005	0.002	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.028
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.002	0.009	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.012	0.050
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.023
Alkali Metals						
Calcium	0.5	mg/L	15	11	10	13
Magnesium	0.5	mg/L	9.1	2.0	1.0	5.1
Potassium	0.5	mg/L	15	1.4	< 0.5	4.7
Sodium	0.5	mg/L	80	5.6	7.4	30

Client Sample ID			SWL4_2	SWL4_3	QC324	QC325
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma12748	P17-Ma12749	P17-Ma12750	P17-Ma12751
Date Sampled			Mar 13, 2017	Mar 13, 2017	Mar 13, 2017	Mar 13, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	10	< 10	-	-
Ammonia (as N)	0.01	mg/L	0.03	0.01	-	-
Chloride	1	mg/L	39	38	-	-
Conductivity (at 25°C)	1	uS/cm	220	220	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.6	0.6	-	-
pH	0.1	pH Units	6.7	6.8	-	-
Phosphate total (as P)	0.05	mg/L	0.06	< 0.05	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as SO ₄)	5	mg/L	13	12	-	-
Total Dissolved Solids	10	mg/L	150	150	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.6	-	-
Total Nitrogen (as N)	0.2	mg/L	0.6	0.6	-	-
Turbidity	1	NTU	4.0	4.8	-	-
E.coli	1	MPN/100mL	9200	700	-	-
Thermotolerant Coliforms	1	MPN/100mL	>24000	>24000	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	27	25	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	27	25	-	-

Client Sample ID			SWL4_2	SWL4_3	QC324	QC325
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma12748	P17-Ma12749	P17-Ma12750	P17-Ma12751
Date Sampled			Mar 13, 2017	Mar 13, 2017	Mar 13, 2017	Mar 13, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.26	0.25	-	-
Aluminium (filtered)	0.05	mg/L	0.11	0.11	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	0.001	-	-
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.88	1.2	-	-
Iron (filtered)	0.05	mg/L	0.18	0.34	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.005	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	9.7	7.9	-	-
Magnesium	0.5	mg/L	4.5	4.3	-	-
Potassium	0.5	mg/L	3.9	3.5	-	-
Sodium	0.5	mg/L	25	26	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 14, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 14, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 14, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 14, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 14, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 14, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 14, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 14, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 14, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 14, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 14, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 14, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 15, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 15, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 15, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 15, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 14, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 14, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 14, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 14, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 13, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 14, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 13, 2017 2:01 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 537669	Due: Mar 20, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail	Nitrogens (speciated)	Alkalinity (speciated)	Zinc (filtered)	Zinc	Turbidity	Total Dissolved Solids	Thermotolerant Coliforms	Sulphate (as SO4)	Sodium	Selenium (filtered)	Selenium	Potassium	Phosphorus reactive (as P)	Phosphate total (as P)	pH	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Magnesium	Lead (filtered)	Lead	Iron (filtered)	Iron	E.coli	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	Chloride	Calcium	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium	Acidity (as CaCO3)				
Melbourne Laboratory - NATA Site # 1254 & 14271	X							X	X				X	X	X												X																		
Sydney Laboratory - NATA Site # 18217				X	X					X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
Test Counts	7	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	9	7	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	115			70-130	Pass	
Ammonia (as N)	%	83			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	115			70-130	Pass		
Nitrate & Nitrite (as N)	%	85			70-130	Pass		
Nitrate (as N)	%	84			70-130	Pass		
Nitrite (as N)	%	96			70-130	Pass		
Phosphate total (as P)	%	97			70-130	Pass		
Phosphorus reactive (as P)	%	122			70-130	Pass		
Sulphate (as SO4)	%	128			70-130	Pass		
Total Dissolved Solids	%	103			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	97			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	74			70-130	Pass		
Total Alkalinity (as CaCO3)	%	77			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	117			70-130	Pass		
Aluminium (filtered)	%	92			70-130	Pass		
Arsenic	%	100			70-130	Pass		
Arsenic (filtered)	%	97			70-130	Pass		
Cadmium	%	104			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	100			70-130	Pass		
Chromium (filtered)	%	96			70-130	Pass		
Copper	%	97			70-130	Pass		
Copper (filtered)	%	96			70-130	Pass		
Iron	%	101			70-130	Pass		
Iron (filtered)	%	104			70-130	Pass		
Lead	%	95			70-130	Pass		
Lead (filtered)	%	98			70-130	Pass		
Manganese	%	107			70-130	Pass		
Manganese (filtered)	%	96			70-130	Pass		
Mercury	%	90			70-130	Pass		
Mercury (filtered)	%	94			70-130	Pass		
Nickel	%	100			70-130	Pass		
Nickel (filtered)	%	95			70-130	Pass		
Selenium	%	104			70-130	Pass		
Selenium (filtered)	%	103			70-130	Pass		
Zinc	%	96			70-130	Pass		
Zinc (filtered)	%	95			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	101			70-130	Pass		
Magnesium	%	97			70-130	Pass		
Potassium	%	94			70-130	Pass		
Sodium	%	97			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ma11020	NCP	%	84		70-130	Pass	
Chloride	M17-Ma10430	NCP	%	105		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ma11020	NCP	%	78		70-130	Pass	
Nitrate (as N)	M17-Ma11020	NCP	%	78		70-130	Pass	
Nitrite (as N)	M17-Ma11020	NCP	%	77		70-130	Pass	
Phosphate total (as P)	P17-Ma12744	CP	%	99		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phosphorus reactive (as P)	M17-Ma09983	NCP	%	86			70-130	Pass	
Sulphate (as SO4)	M17-Ma09446	NCP	%	79			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	Z17-Ma07165	NCP	%	47			70-130	Fail	Q08
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO3)	M17-Ma11726	NCP	%	94			70-130	Pass	
Carbonate Alkalinity (as CaCO3)	B17-Ma10844	NCP	%	80			70-130	Pass	
Total Alkalinity (as CaCO3)	B17-Ma10844	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	P17-Ma14552	NCP	%	106			70-130	Pass	
Arsenic (filtered)	S17-Ma17426	NCP	%	97			70-130	Pass	
Cadmium (filtered)	S17-Ma17426	NCP	%	103			70-130	Pass	
Chromium (filtered)	S17-Ma17426	NCP	%	94			70-130	Pass	
Copper (filtered)	S17-Ma17426	NCP	%	85			70-130	Pass	
Iron (filtered)	M17-Ma16677	NCP	%	109			70-130	Pass	
Lead (filtered)	S17-Ma17426	NCP	%	74			70-130	Pass	
Manganese (filtered)	S17-Ma17426	NCP	%	101			70-130	Pass	
Mercury (filtered)	P17-Ma14552	NCP	%	95			70-130	Pass	
Nickel (filtered)	S17-Ma17426	NCP	%	87			70-130	Pass	
Selenium (filtered)	S17-Ma17426	NCP	%	71			70-130	Pass	
Zinc (filtered)	S17-Ma17426	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	P17-Ma12745	CP	%	113			70-130	Pass	
Arsenic	P17-Ma12745	CP	%	104			70-130	Pass	
Cadmium	P17-Ma12745	CP	%	106			70-130	Pass	
Chromium	P17-Ma12745	CP	%	111			70-130	Pass	
Copper	P17-Ma12745	CP	%	98			70-130	Pass	
Iron	P17-Ma12745	CP	%	102			70-130	Pass	
Lead	P17-Ma12745	CP	%	98			70-130	Pass	
Manganese	P17-Ma12745	CP	%	111			70-130	Pass	
Mercury	P17-Ma12745	CP	%	94			70-130	Pass	
Nickel	P17-Ma12745	CP	%	97			70-130	Pass	
Selenium	P17-Ma12745	CP	%	105			70-130	Pass	
Zinc	P17-Ma12745	CP	%	99			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	P17-Ma12745	CP	%	99			70-130	Pass	
Magnesium	P17-Ma12745	CP	%	103			70-130	Pass	
Potassium	P17-Ma12745	CP	%	94			70-130	Pass	
Sodium	P17-Ma12745	CP	%	94			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO3)	B17-Ma10844	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Ammonia (as N)	M17-Ma11020	NCP	mg/L	0.41	0.36	11	30%	Pass	
Chloride	M17-Ma11082	NCP	mg/L	1200	1200	<1	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ma11020	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	M17-Ma11020	NCP	mg/L	0.03	0.03	5.0	30%	Pass	
Nitrite (as N)	M17-Ma11020	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (as P)	Z17-Ma07160	NCP	mg/L	0.10	0.10	1.0	30%	Pass	
Phosphorus reactive (as P)	M17-Ma09983	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO4)	M17-Ma11763	NCP	mg/L	66	65	1.4	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	M17-Ma11169	NCP	mg/L	13000	13000	4.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	Z17-Ma07160	NCP	mg/L	0.7	0.6	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium	P17-Ma12744	CP	mg/L	1.3	1.3	2.0	30%	Pass	
Aluminium (filtered)	M17-Ma16676	NCP	mg/L	0.36	0.37	2.0	30%	Pass	
Arsenic	P17-Ma12744	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	S17-Ma17772	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	P17-Ma12744	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	S17-Ma17772	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	P17-Ma12744	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chromium (filtered)	M17-Ma16676	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M17-Ma16676	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P17-Ma12744	CP	mg/L	0.60	0.61	1.0	30%	Pass	
Iron (filtered)	M17-Ma16676	NCP	mg/L	0.25	0.26	5.0	30%	Pass	
Lead	P17-Ma12744	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M17-Ma16676	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	M17-Ma16676	NCP	mg/L	0.006	0.007	2.0	30%	Pass	
Mercury	P17-Ma12744	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	S17-Ma17425	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P17-Ma12744	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	S17-Ma17425	NCP	mg/L	0.044	0.044	<1	30%	Pass	
Selenium (filtered)	M17-Ma16666	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	P17-Ma14561	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	M17-Ma16676	NCP	mg/L	0.014	0.014	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	P17-Ma12744	CP	mg/L	15	15	3.0	30%	Pass	
Magnesium	P17-Ma12744	CP	mg/L	9.1	9.0	2.0	30%	Pass	
Potassium	P17-Ma12744	CP	mg/L	15	15	1.0	30%	Pass	
Sodium	P17-Ma12744	CP	mg/L	80	81	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	P17-Ma12749	CP	uS/cm	220	220	<1	30%	Pass	
pH	P17-Ma12749	CP	pH Units	6.8	6.7	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma12749	CP	mg/L	25	25	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	P17-Ma12749	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma12749	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	P17-Ma12749	CP	mg/L	25	25	<1	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 14, 2017 2:50 PM**
Eurofins | mgt reference: **537847**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

SWL22_1 and SWL22_2 (listed twice on COC) not received. Additional samples received (Not on COC) SWL21_1, SWL21_2 and SWL21_3. Logged as bottle labels

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **537847-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Mar 14, 2017

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			P17-Ma14551	P17-Ma14552	P17-Ma14553	P17-Ma14554
Eurofins mgt Sample No.			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	52	55	50	61
Ammonia (as N)	0.01	mg/L	0.22	0.12	2.4	0.35
Chloride	1	mg/L	2900	1600	6900	2300
Conductivity (at 25°C)	1	uS/cm	7800	5300	22000	7400
Nitrate & Nitrite (as N)	0.05	mg/L	0.06	0.06	48	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	0.06	47	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.56	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	7.9	0.3
pH	0.1	pH Units	6.4	5.3	3.7	5.7
Phosphate total (as P)	0.05	mg/L	0.13	0.16	0.57	0.29
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.33	< 0.05
Sulphate (as SO ₄)	5	mg/L	180	180	650	220
Total Dissolved Solids	10	mg/L	4700	2500	13000	3800
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.5	8.1	0.7
Total Nitrogen (as N)	0.2	mg/L	0.7	0.6	56	0.7
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	31	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	31	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	12	3.8	1.5	10
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.68	< 0.05
Arsenic	0.001	mg/L	0.004	0.003	0.003	0.054
Arsenic (filtered)	0.001	mg/L	0.003	< 0.001	0.005	0.004
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.0030	0.0020
Cadmium (filtered)	0.00005	mg/L	0.00011	< 0.00005	0.0026	< 0.00005
Chromium	0.001	mg/L	0.029	0.006	0.002	0.008
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Copper	0.001	mg/L	0.008	0.002	0.032	0.008
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.027	< 0.001
Iron	0.05	mg/L	3.0	18	1.5	14
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.83	0.11
Lead	0.001	mg/L	0.052	0.001	0.001	0.14
Lead (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.001

Client Sample ID			MW50 Water	MW51 Water	MW52 Water	MW53 Water
Sample Matrix			P17-Ma14551	P17-Ma14552	P17-Ma14553	P17-Ma14554
Eurofins mgt Sample No.			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.017	0.006	0.29	0.057
Manganese (filtered)	0.005	mg/L	0.015	< 0.005	0.25	0.044
Mercury	0.0001	mg/L	0.0003	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Nickel	0.001	mg/L	0.004	0.002	0.022	0.023
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.020	0.008
Selenium	0.001	mg/L	0.009	0.001	0.006	0.008
Selenium (filtered)	0.001	mg/L	0.011	0.003	0.020	0.006
Zinc	0.005	mg/L	0.007	0.009	0.41	2.0
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.36	0.12
Alkali Metals						
Calcium	0.5	mg/L	27	25	100	46
Magnesium	0.5	mg/L	160	130	450	210
Potassium	0.5	mg/L	37	13	100	22
Sodium	0.5	mg/L	1400	850	4200	1200

Client Sample ID			MW54 Water	MW48 Water	MW49 Water	MW43 Water
Sample Matrix			P17-Ma14555	P17-Ma14556	P17-Ma14557	P17-Ma14558
Eurofins mgt Sample No.			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	18	72	53	140
Ammonia (as N)	0.01	mg/L	0.05	0.02	0.04	0.87
Chloride	1	mg/L	380	710	1600	1200
Conductivity (at 25°C)	1	uS/cm	1500	3100	5600	4200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	3.0
pH	0.1	pH Units	7.2	4.5	5.1	6.2
Phosphate total (as P)	0.05	mg/L	0.21	0.14	< 0.05	0.25
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	34	120	260	45
Total Dissolved Solids	10	mg/L	920	1700	2800	3400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	3.9
Total Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	< 0.2	3.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	130	< 20	< 20	130
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	130	< 20	< 20	130
Heavy Metals						
Aluminium	0.05	mg/L	0.44	3.0	0.80	11
Aluminium (filtered)	0.05	mg/L	< 0.05	0.18	< 0.05	1.2
Arsenic	0.001	mg/L	0.003	0.002	0.002	0.014
Arsenic (filtered)	0.001	mg/L	0.001	0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	< 0.00005	0.00018	< 0.00005	< 0.00005

Client Sample ID			MW54 Water	MW48 Water	MW49 Water	MW43 Water
Sample Matrix			P17-Ma14555	P17-Ma14556	P17-Ma14557	P17-Ma14558
Eurofins mgt Sample No.			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00009	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.003	< 0.001	0.022
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.009
Copper	0.001	mg/L	< 0.001	0.001	0.006	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.005	< 0.001
Iron	0.05	mg/L	4.8	2.3	0.94	3.8
Iron (filtered)	0.05	mg/L	< 0.05	0.12	< 0.05	0.09
Lead	0.001	mg/L	< 0.001	0.014	0.25	0.025
Lead (filtered)	0.001	mg/L	< 0.001	0.008	0.21	< 0.001
Manganese	0.005	mg/L	0.12	0.026	0.014	0.009
Manganese (filtered)	0.005	mg/L	0.095	0.021	0.011	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.011	0.005	0.008
Nickel (filtered)	0.001	mg/L	< 0.001	0.014	0.004	0.002
Selenium	0.001	mg/L	0.001	0.002	< 0.001	0.017
Selenium (filtered)	0.001	mg/L	0.003	0.002	0.001	0.005
Zinc	0.005	mg/L	< 0.005	0.014	0.040	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	0.007	0.034	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	83	14	31	78
Magnesium	0.5	mg/L	30	70	160	130
Potassium	0.5	mg/L	8.1	13	18	9.2
Sodium	0.5	mg/L	180	520	900	670

Client Sample ID			MW44 Water	MW34 Water	M01SWL19_1 Water	M01SWL19_3 Water
Sample Matrix			P17-Ma14559	P17-Ma14560	P17-Ma14561	P17-Ma14562
Eurofins mgt Sample No.			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	13	69	17	15
Ammonia (as N)	0.01	mg/L	0.30	0.04	0.02	< 0.01
Chloride	1	mg/L	300	61	1200	1200
Conductivity (at 25°C)	1	uS/cm	1400	350	4200	4200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.1	3.3	0.4	0.4
pH	0.1	pH Units	7.6	6.0	6.2	6.1
Phosphate total (as P)	0.05	mg/L	0.61	1.5	0.18	0.22
Phosphorus reactive (as P)	0.05	mg/L	0.59	1.5	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	22	G01 < 50	130	130
Total Dissolved Solids	10	mg/L	910	470	2300	2200
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	3.3	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	1.4	3.3	0.4	0.4
Turbidity	1	NTU	-	-	200	67
E.coli	1	MPN/100mL	-	-	M15 < 10	M15 < 10
Thermotolerant Coliforms	1	MPN/100mL	-	-	170	63

Client Sample ID			MW44	MW34	M01SWL19_1	M01SWL19_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma14559	P17-Ma14560	P17-Ma14561	P17-Ma14562
Date Sampled			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	220	52	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	220	52	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	13	1.4	0.34	0.54
Aluminium (filtered)	0.05	mg/L	0.08	0.62	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.014	0.003	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.009	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.024	0.002	0.001	0.001
Chromium (filtered)	0.001	mg/L	0.005	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.005	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	4.4	2.0	10	16
Iron (filtered)	0.05	mg/L	0.42	1.6	0.09	0.09
Lead	0.001	mg/L	0.023	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	< 0.005	0.073	0.065
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.025	0.037
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.006	< 0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.017	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.006	0.002	< 0.001	< 0.001
Zinc	0.005	mg/L	0.040	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	22	25	15	15
Magnesium	0.5	mg/L	31	11	90	92
Potassium	0.5	mg/L	6.1	16	14	14
Sodium	0.5	mg/L	240	41	730	760

Client Sample ID			M01SWL20_1	M01SWL20_2	M01SWL20_3	M01SWL21_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma14563	P17-Ma14564	P17-Ma14565	P17-Ma14566
Date Sampled			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	10	10	11	18
Ammonia (as N)	0.01	mg/L	0.11	0.10	0.17	5.0
Chloride	1	mg/L	1300	1400	1400	760
Conductivity (at 25°C)	1	uS/cm	4600	4700	4700	3100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			M01 SWL20_1	M01 SWL20_2	M01 SWL20_3	M01 SWL21_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma14563	P17-Ma14564	P17-Ma14565	P17-Ma14566
Date Sampled			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	0.8	0.9	0.8	0.4
pH	0.1	pH Units	7.0	6.9	7.0	7.2
Phosphate total (as P)	0.05	mg/L	0.07	0.07	0.06	0.97
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.45
Sulphate (as SO4)	5	mg/L	56	57	57	17
Total Dissolved Solids	10	mg/L	2700	2700	2700	1900
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	1.0	1.0	5.4
Total Nitrogen (as N)	0.2	mg/L	0.9	1.0	1.0	5.4
Turbidity	1	NTU	45	49	48	210
E.coli	1	MPN/100mL	M15 <10	73	10	20000
Thermotolerant Coliforms	1	MPN/100mL	750	1400	2200	>24000
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	42	43	45	130
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	42	43	45	130
Heavy Metals						
Aluminium	0.05	mg/L	0.06	0.07	0.07	0.65
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	5.4	5.7	6.7	9.8
Iron (filtered)	0.05	mg/L	1.3	1.4	1.8	3.6
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.032	0.032	0.038	0.38
Manganese (filtered)	0.005	mg/L	0.025	0.028	0.030	0.27
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.008	0.008	0.006	0.014
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	14	13	15	44
Magnesium	0.5	mg/L	90	79	89	77
Potassium	0.5	mg/L	17	15	17	30
Sodium	0.5	mg/L	860	750	850	460

Client Sample ID			M01 SWL21_2	M01 SWL21_3	M01 QC327	QC326
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma14567	P17-Ma14568	P17-Ma14569	P17-Ma14570
Date Sampled			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	33	56	49
Ammonia (as N)	0.01	mg/L	3.4	3.5	5.0	0.18
Chloride	1	mg/L	790	810	830	2700
Conductivity (at 25°C)	1	uS/cm	2900	3000	2900	9100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.04
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.4	1.4	1.6	< 0.2
pH	0.1	pH Units	7.3	7.3	7.3	5.8
Phosphate total (as P)	0.05	mg/L	1.2	1.6	1.4	0.17
Phosphorus reactive (as P)	0.05	mg/L	0.53	0.63	0.33	< 0.05
Sulphate (as SO ₄)	5	mg/L	18	17	18	170
Total Dissolved Solids	10	mg/L	1900	1900	1900	5500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.8	4.9	6.6	0.2
Total Nitrogen (as N)	0.2	mg/L	4.8	4.9	6.6	0.3
Turbidity	1	NTU	260	140	200	2200
E.coli	1	MPN/100mL	770	1100	24000	-
Thermotolerant Coliforms	1	MPN/100mL	3900	2900	>24000	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	110	120	25
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	110	120	25
Heavy Metals						
Aluminium	0.05	mg/L	1.7	0.44	0.87	11
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.004	0.004	0.005	0.006
Arsenic (filtered)	0.001	mg/L	0.002	0.002	0.003	< 0.001
Cadmium	0.00005	mg/L	0.00012	< 0.00005	< 0.00005	0.00014
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00009
Chromium	0.001	mg/L	0.030	0.002	0.002	0.033
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	< 0.001	0.002	0.012
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	11	7.8	11	4.3
Iron (filtered)	0.05	mg/L	3.3	4.0	3.9	0.14
Lead	0.001	mg/L	0.003	< 0.001	0.002	0.097
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Manganese	0.005	mg/L	0.36	0.32	0.40	0.018
Manganese (filtered)	0.005	mg/L	0.19	0.25	0.31	0.015
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.009	0.002	0.002	0.003
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Selenium	0.001	mg/L	0.002	< 0.001	0.001	0.015
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.023	0.006	0.015	0.007
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.006

Client Sample ID			M01 SWL21_2	M01 SWL21_3	M01 QC327	QC326
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma14567	P17-Ma14568	P17-Ma14569	P17-Ma14570
Date Sampled			Mar 14, 2017	Mar 14, 2017	Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	42	39	45	33
Magnesium	0.5	mg/L	73	71	80	200
Potassium	0.5	mg/L	26	25	31	47
Sodium	0.5	mg/L	450	460	490	1700

Client Sample ID			QC329	QC330
Sample Matrix			Water	Water
Eurofins mgt Sample No.			P17-Ma14571	P17-Ma14572
Date Sampled			Mar 14, 2017	Mar 14, 2017
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	0.12	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 17, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 17, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 17, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 17, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 17, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 17, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 17, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 17, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 17, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 17, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 17, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 17, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 14, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 14, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 14, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 14, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 17, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 17, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 17, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 17, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 14, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 17, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 14, 2017 2:50 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 537847	Due: Mar 21, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X								X			X		X											X	X	X											X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X					X	X				
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
10	MW34	Mar 14, 2017		Water	P17-Ma14560	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	SWL19_1	Mar 14, 2017		Water	P17-Ma14561	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL19_3	Mar 14, 2017		Water	P17-Ma14562	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL20_1	Mar 14, 2017		Water	P17-Ma14563	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL20_2	Mar 14, 2017		Water	P17-Ma14564	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL20_3	Mar 14, 2017		Water	P17-Ma14565	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	SWL21_1	Mar 14, 2017		Water	P17-Ma14566	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL21_2	Mar 14, 2017		Water	P17-Ma14567	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL21_3	Mar 14, 2017		Water	P17-Ma14568	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
19	QC327	Mar 14, 2017		Water	P17-Ma14569	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	QC326	Mar 14, 2017		Water	P17-Ma14570	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
21	QC329	Mar 14, 2017		Water	P17-Ma14571			X	X		X						X		X		X		X			X		X															X				

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Project Name: NL_BASELINE GW_SW MONITORING		
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Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Calcium	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Magnesium	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Potassium	Selenium	Selenium (filtered)	Sodium	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X								X			X		X												X	X	X										X	X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												X	X	
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
22	QC330	Mar 14, 2017		Water	P17-Ma14572		X		X		X					X		X			X		X			X		X																	
Test Counts						20	20	22	20	22	20	22	20	20	20	22	20	20	22	9	20	22	20	22	20	20	22	20	22	20	20	20	20	20	20	20	20	20	20	20	20	22	20	20	

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	116			70-130	Pass	
Ammonia (as N)	%	85			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Chloride	%	115			70-130	Pass		
Nitrate & Nitrite (as N)	%	105			70-130	Pass		
Nitrate (as N)	%	105			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Phosphate total (as P)	%	94			70-130	Pass		
Phosphorus reactive (as P)	%	113			70-130	Pass		
Sulphate (as SO4)	%	112			70-130	Pass		
Total Dissolved Solids	%	104			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	87			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	95			70-130	Pass		
Total Alkalinity (as CaCO3)	%	95			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	117			70-130	Pass		
Aluminium (filtered)	%	92			70-130	Pass		
Arsenic	%	96			70-130	Pass		
Arsenic (filtered)	%	97			70-130	Pass		
Cadmium	%	100			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	98			70-130	Pass		
Chromium (filtered)	%	96			70-130	Pass		
Copper	%	101			70-130	Pass		
Copper (filtered)	%	96			70-130	Pass		
Iron	%	101			70-130	Pass		
Iron (filtered)	%	104			70-130	Pass		
Lead	%	103			70-130	Pass		
Lead (filtered)	%	98			70-130	Pass		
Manganese	%	107			70-130	Pass		
Manganese (filtered)	%	96			70-130	Pass		
Mercury	%	106			70-130	Pass		
Mercury (filtered)	%	94			70-130	Pass		
Nickel	%	104			70-130	Pass		
Nickel (filtered)	%	95			70-130	Pass		
Selenium	%	104			70-130	Pass		
Selenium (filtered)	%	103			70-130	Pass		
Zinc	%	104			70-130	Pass		
Zinc (filtered)	%	95			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	116			70-130	Pass		
Magnesium	%	113			70-130	Pass		
Potassium	%	101			70-130	Pass		
Sodium	%	103			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M17-Ma14589	NCP	%	101		70-130	Pass	
Phosphorus reactive (as P)	B17-Ma15636	NCP	%	110		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ma14589	NCP	%	79		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
				Result 1				
Sodium	S17-Ja16277	NCP	%	111		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma17826	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	P17-Ma14552	CP	%	83			70-130	Pass	
Aluminium (filtered)	P17-Ma14552	CP	%	106			70-130	Pass	
Arsenic	P17-Ma14552	CP	%	107			70-130	Pass	
Arsenic (filtered)	P17-Ma14552	CP	%	107			70-130	Pass	
Cadmium	P17-Ma14552	CP	%	106			70-130	Pass	
Cadmium (filtered)	P17-Ma14552	CP	%	107			70-130	Pass	
Chromium	P17-Ma14552	CP	%	115			70-130	Pass	
Chromium (filtered)	P17-Ma14552	CP	%	104			70-130	Pass	
Copper	P17-Ma14552	CP	%	96			70-130	Pass	
Copper (filtered)	P17-Ma14552	CP	%	94			70-130	Pass	
Iron	P17-Ma14552	CP	%	125			70-130	Pass	
Iron (filtered)	P17-Ma14552	CP	%	101			70-130	Pass	
Lead	P17-Ma14552	CP	%	93			70-130	Pass	
Lead (filtered)	P17-Ma14552	CP	%	96			70-130	Pass	
Manganese	P17-Ma14552	CP	%	111			70-130	Pass	
Manganese (filtered)	P17-Ma14552	CP	%	103			70-130	Pass	
Mercury	P17-Ma14552	CP	%	96			70-130	Pass	
Mercury (filtered)	P17-Ma14552	CP	%	95			70-130	Pass	
Nickel	P17-Ma14552	CP	%	95			70-130	Pass	
Nickel (filtered)	P17-Ma14552	CP	%	95			70-130	Pass	
Selenium	P17-Ma14552	CP	%	107			70-130	Pass	
Selenium (filtered)	P17-Ma14552	CP	%	105			70-130	Pass	
Zinc	P17-Ma14552	CP	%	97			70-130	Pass	
Zinc (filtered)	P17-Ma14552	CP	%	97			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	P17-Ma14552	CP	%	126			70-130	Pass	
Magnesium	P17-Ma14552	CP	%	181			70-130	Fail	Q08
Potassium	P17-Ma14552	CP	%	117			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	P17-Ma14562	CP	%	87			70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ma14562	CP	%	107			70-130	Pass	
Nitrate (as N)	P17-Ma14562	CP	%	106			70-130	Pass	
Nitrite (as N)	P17-Ma14562	CP	%	103			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	P17-Ma14569	CP	%	91			70-130	Pass	
Sulphate (as SO ₄)	P17-Ma14569	CP	%	114			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	P17-Ma14569	CP	%	109			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ma16656	NCP	mg/L	31	29	5.0	30%	Pass	
Chloride	P17-Ma15942	NCP	mg/L	210	210	<1	30%	Pass	
Conductivity (at 25°C)	P17-Ma14551	CP	uS/cm	7800	9300	17	30%	Pass	
Phosphorus reactive (as P)	B17-Ma15636	NCP	mg/L	0.14	0.15	3.3	30%	Pass	
Sulphate (as SO ₄)	M17-Ma17232	NCP	mg/L	150	150	1.3	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma14551	CP	mg/L	31	28	9.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ma14551	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma14551	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ma14551	CP	mg/L	31	28	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	P17-Ma12744	NCP	mg/L	1.3	1.3	2.0	30%	Pass
Aluminium (filtered)	P17-Ma14551	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	P17-Ma12744	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Arsenic (filtered)	S17-Ma21907	NCP	mg/L	0.005	0.004	9.0	30%	Pass
Cadmium (filtered)	P17-Ma14551	CP	mg/L	0.00011	0.00009	20	30%	Pass
Chromium	P17-Ma12744	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	P17-Ma14551	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	S17-Ma14577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P17-Ma12744	NCP	mg/L	0.60	0.61	1.0	30%	Pass
Iron (filtered)	P17-Ma14551	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Lead	P17-Ma12744	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	P17-Ma14551	CP	mg/L	0.003	0.003	3.0	30%	Pass
Manganese	P17-Ma14551	CP	mg/L	0.017	0.021	20	30%	Pass
Manganese (filtered)	P17-Ma14551	CP	mg/L	0.015	0.015	1.0	30%	Pass
Mercury (filtered)	S17-Ma17772	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	P17-Ma14551	CP	mg/L	0.004	0.004	16	30%	Pass
Nickel (filtered)	P17-Ma14551	CP	mg/L	0.002	0.002	5.0	30%	Pass
Selenium (filtered)	M17-Ma16666	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	P17-Ma14551	CP	mg/L	0.007	0.007	7.0	30%	Pass
Zinc (filtered)	P17-Ma14551	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ma14551	CP	mg/L	27	29	5.0	30%	Pass
Magnesium	P17-Ma14551	CP	mg/L	160	170	5.0	30%	Pass
Potassium	P17-Ma14551	CP	mg/L	37	39	5.0	30%	Pass
Sodium	P17-Ma14551	CP	mg/L	1400	1500	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Ma14348	NCP	NTU	< 1	< 1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P17-Ma14561	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Cadmium	P17-Ma14561	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Copper (filtered)	P17-Ma14561	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P17-Ma14561	CP	mg/L	0.025	0.024	1.0	30%	Pass
Mercury	P17-Ma14561	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	P17-Ma14561	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ma14561	CP	mg/L	15	16	4.0	30%	Pass
Magnesium	P17-Ma14561	CP	mg/L	90	93	3.0	30%	Pass
Potassium	P17-Ma14561	CP	mg/L	14	14	4.0	30%	Pass
Sodium	P17-Ma14561	CP	mg/L	730	700	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ma14562	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Nitrate & Nitrite (as N)	P17-Ma14562	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	P17-Ma14562	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	P17-Ma14562	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	P17-Ma14566	CP	mg/L	1900	2000	5.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ma14568	CP	uS/cm	3000	2900	3.0	30%	Pass
pH	P17-Ma14568	CP	pH Units	7.3	7.3	pass	30%	Pass
Phosphate total (as P)	P17-Ma14568	CP	mg/L	1.6	1.6	2.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	P17-Ma14568	CP	mg/L	4.9	5.0	1.9	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma14568	CP	mg/L	110	110	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ma14568	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma14568	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ma14568	CP	mg/L	110	110	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
M01	Microbiological Testing performed outside the recommended holding time
M15	LOR raised due to physical properties of sample
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 15, 2017 5:00 PM**
Eurofins | mgt reference: **538122**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 15, 2017 5:00 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538122	Due: Mar 22, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (specified)	Alkali Metals	Nitrogens (specified)	
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X		X									X	X	X						X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X					X	X			X
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
22	SWL15_2	Mar 15, 2017		Water	M17-Ma16677	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
23	QC333	Mar 15, 2017		Water	M17-Ma16678	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
24	QC334	Mar 15, 2017		Water	M17-Ma16679	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
25	QC335	Mar 15, 2017		Water	M17-Ma16680	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
26	QC331	Mar 15, 2017		Water	M17-Ma16681	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts					24	24	26	24	26	24	26	24	24	26	24	24	26	12	24	26	24	26	24	26	24	26	24	26	24	24	24	24	24	24	24	24	12	24	12	24	26	24	24

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **538122-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Mar 15, 2017

Client Sample ID			MW33 Water	MW35 Water	MW36 Water	MW37 Water
Sample Matrix			M17-Ma16656	M17-Ma16657	M17-Ma16658	M17-Ma16659
Eurofins mgt Sample No.			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	31	95	13	19
Ammonia (as N)	0.01	mg/L	0.34	0.24	0.04	0.36
Chloride	1	mg/L	67	42	17	18
Conductivity (at 25°C)	1	uS/cm	330	200	99	92
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	1.9	0.19
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	1.9	0.15
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	0.04
Organic Nitrogen (as N)	0.2	mg/L	0.5	2.3	1.9	0.62
pH	0.1	pH Units	7.0	4.4	6.4	6.0
Phosphate total (as P)	0.05	mg/L	0.10	0.71	0.10	0.28
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.65	0.07	0.20
Sulphate (as SO ₄)	5	mg/L	< 5	25	< 5	< 5
Total Dissolved Solids	10	mg/L	260	340	110	76
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	2.6	< 0.2	1.0
Total Nitrogen (as N)	0.2	mg/L	0.82	2.6	1.9	1.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	76	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	76	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.30	0.54	0.06	0.17
Aluminium (filtered)	0.05	mg/L	0.23	0.48	< 0.05	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.11	0.21	< 0.05	0.06
Iron (filtered)	0.05	mg/L	0.11	0.18	< 0.05	0.06
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW33 Water	MW35 Water	MW36 Water	MW37 Water
Sample Matrix			M17-Ma16656	M17-Ma16657	M17-Ma16658	M17-Ma16659
Eurofins mgt Sample No.			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.008	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	0.002	< 0.001	0.003	0.005
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	26	9.4	11	4.2
Magnesium	0.5	mg/L	5.4	2.8	1.8	1.8
Potassium	0.5	mg/L	2.9	12	< 0.5	1.2
Sodium	0.5	mg/L	37	19	6.7	9.2

Client Sample ID			MW38 Water	MW39 Water	MW45 Water	MW46 Water
Sample Matrix			M17-Ma16660	M17-Ma16661	M17-Ma16662	M17-Ma16663
Eurofins mgt Sample No.			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	50	27	13	20
Ammonia (as N)	0.01	mg/L	0.63	1.0	0.19	0.58
Chloride	1	mg/L	120	120	450	670
Conductivity (at 25°C)	1	uS/cm	550	930	1800	2500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.96	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.94	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.2	1.3	0.2	0.26
pH	0.1	pH Units	6.7	6.5	7.9	7.7
Phosphate total (as P)	0.05	mg/L	0.96	0.63	0.13	0.09
Phosphorus reactive (as P)	0.05	mg/L	0.86	0.23	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	15	190	25	11
Total Dissolved Solids	10	mg/L	370	640	1100	1700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.8	2.3	0.4	0.8
Total Nitrogen (as N)	0.2	mg/L	1.8	3.3	0.42	0.84
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	55	47	230	220
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	55	47	230	220
Heavy Metals						
Aluminium	0.05	mg/L	2.6	< 0.05	0.90	0.25
Aluminium (filtered)	0.05	mg/L	0.33	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.003	0.003	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002

Client Sample ID			MW38	MW39	MW45	MW46
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16660	M17-Ma16661	M17-Ma16662	M17-Ma16663
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	< 0.001	0.002	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.6	0.86	1.2	0.43
Iron (filtered)	0.05	mg/L	0.25	0.71	< 0.05	0.09
Lead	0.001	mg/L	0.003	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.020	< 0.005	0.006
Manganese (filtered)	0.005	mg/L	< 0.005	0.019	< 0.005	0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.29	< 0.005	0.057	0.008
Zinc (filtered)	0.005	mg/L	0.017	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	19	49	67	92
Magnesium	0.5	mg/L	11	25	39	58
Potassium	0.5	mg/L	16	39	5.1	6.0
Sodium	0.5	mg/L	65	62	240	360

Client Sample ID			MW47	SWL18_1	SWL18_2	SWL18_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16664	M17-Ma16665	M17-Ma16666	M17-Ma16667
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.12	0.06	0.07	0.05
Chloride	1	mg/L	470	1200	1200	1200
Conductivity (at 25°C)	1	uS/cm	2000	4200	4200	4100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	1.1	1.2	1.3
pH	0.1	pH Units	7.9	7.5	7.5	7.5
Phosphate total (as P)	0.05	mg/L	0.14	0.52	0.54	0.56
Phosphorus reactive (as P)	0.05	mg/L	0.08	0.29	0.30	0.30
Sulphate (as SO4)	5	mg/L	37	70	70	71
Total Dissolved Solids	10	mg/L	1100	2600	2600	2600
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	1.2	1.3	1.3
Total Nitrogen (as N)	0.2	mg/L	0.28	1.2	1.3	1.3
Turbidity	1	NTU	-	8.6	8.5	9.5

Client Sample ID			MW47	SWL18_1	SWL18_2	SWL18_3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16664	M17-Ma16665	M17-Ma16666	M17-Ma16667
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	220	88	85	83
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	220	88	85	83
Heavy Metals						
Aluminium	0.05	mg/L	1.7	0.07	0.07	0.07
Aluminium (filtered)	0.05	mg/L	< 0.05	0.43	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.004	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.84	1.8	1.8	1.9
Iron (filtered)	0.05	mg/L	< 0.05	1.0	0.94	0.96
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.11	0.11	0.11
Manganese (filtered)	0.005	mg/L	0.006	0.096	0.098	0.098
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	0.002	0.002
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	< 0.005	0.007	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	46	38	37	39
Magnesium	0.5	mg/L	37	100	100	110
Potassium	0.5	mg/L	3.0	17	17	17
Sodium	0.5	mg/L	290	660	630	670
Pathogens						
E.coli	1	MPN/100mL	-	10	31	31
Thermotolerant Coliforms	1	MPN/100mL	-	1700	1400	1200

Client Sample ID			SWL22_1	SWL22_2	SWL22_3	SWL16_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16668	M17-Ma16669	M17-Ma16670	M17-Ma16671
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	12	11	< 10
Ammonia (as N)	0.01	mg/L	0.43	0.43	0.45	0.02
Chloride	1	mg/L	1100	1100	1100	74
Conductivity (at 25°C)	1	uS/cm	3800	3900	3900	400
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	0.03
Organic Nitrogen (as N)	0.2	mg/L	1.7	1.7	1.5	0.83
pH	0.1	pH Units	7.5	7.3	7.4	7.1
Phosphate total (as P)	0.05	mg/L	1.3	1.3	1.4	0.68
Phosphorus reactive (as P)	0.05	mg/L	0.59	0.61	0.60	0.64
Sulphate (as SO ₄)	5	mg/L	50	50	51	18
Total Dissolved Solids	10	mg/L	2500	2500	2400	260
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.1	2.1	2.0	0.9
Total Nitrogen (as N)	0.2	mg/L	2.1	2.1	2	0.85
Turbidity	1	NTU	26	26	26	4.0
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	110	110	43
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	110	110	43
Heavy Metals						
Aluminium	0.05	mg/L	0.09	0.09	0.10	0.13
Aluminium (filtered)	0.05	mg/L	0.06	0.06	0.06	0.10
Arsenic	0.001	mg/L	0.002	0.002	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.001	0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.8	2.9	2.8	0.56
Iron (filtered)	0.05	mg/L	1.2	1.2	1.3	0.38
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.27	0.26	0.27	0.006
Manganese (filtered)	0.005	mg/L	0.25	0.25	0.25	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.003	0.003	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	0.002	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL22_1	SWL22_2	SWL22_3	SWL16_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16668	M17-Ma16669	M17-Ma16670	M17-Ma16671
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	41	40	40	18
Magnesium	0.5	mg/L	95	95	94	7.2
Potassium	0.5	mg/L	19	18	19	12
Sodium	0.5	mg/L	590	590	580	43
Pathogens						
E.coli	1	MPN/100mL	31	41	10	110
Thermotolerant Coliforms	1	MPN/100mL	530	330	320	490

Client Sample ID			SWL16_2	SWL16_3	QC336	QC337
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16672	M17-Ma16673	M17-Ma16674	M17-Ma16675
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	11	-	-
Ammonia (as N)	0.01	mg/L	< 0.01	0.09	-	-
Chloride	1	mg/L	73	75	-	-
Conductivity (at 25°C)	1	uS/cm	400	400	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Organic Nitrogen (as N)	0.2	mg/L	0.88	1.4	-	-
pH	0.1	pH Units	7.0	6.7	-	-
Phosphate total (as P)	0.05	mg/L	0.78	1.2	-	-
Phosphorus reactive (as P)	0.05	mg/L	0.61	0.41	-	-
Sulphate (as SO ₄)	5	mg/L	19	21	-	-
Total Dissolved Solids	10	mg/L	270	260	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	1.4	-	-
Total Nitrogen (as N)	0.2	mg/L	0.88	1.4	-	-
Turbidity	1	NTU	18	68	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	43	38	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	43	38	-	-
Heavy Metals						
Aluminium	0.05	mg/L	0.14	0.27	-	-
Aluminium (filtered)	0.05	mg/L	0.09	0.10	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	-	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.74	3.9	-	-
Iron (filtered)	0.05	mg/L	0.40	0.83	< 0.05	< 0.05

Client Sample ID			SWL16_2	SWL16_3	QC336	QC337
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16672	M17-Ma16673	M17-Ma16674	M17-Ma16675
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.008	0.013	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	18	19	-	-
Magnesium	0.5	mg/L	7.3	7.0	-	-
Potassium	0.5	mg/L	12	11	-	-
Sodium	0.5	mg/L	44	41	-	-
Pathogens						
E.coli	1	MPN/100mL	63	150	-	-
Thermotolerant Coliforms	1	MPN/100mL	190	690	-	-

Client Sample ID			SWL15_1	SWL15_2	QC333	QC334
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16676	M17-Ma16677	M17-Ma16678	M17-Ma16679
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	34	34	17	< 10
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	0.55	0.14
Chloride	1	mg/L	76	90	620	450
Conductivity (at 25°C)	1	uS/cm	380	380	2700	2100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.2	1.2	0.3	< 0.2
pH	0.1	pH Units	4.4	4.4	7.4	7.8
Phosphate total (as P)	0.05	mg/L	0.21	0.18	0.12	0.17
Phosphorus reactive (as P)	0.05	mg/L	0.15	0.15	< 0.05	0.10
Sulphate (as SO ₄)	5	mg/L	8.6	8.6	11	29
Total Dissolved Solids	10	mg/L	300	310	1600	1100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	1.2	0.9	0.3
Total Nitrogen (as N)	0.2	mg/L	1.2	1.2	0.85	0.31
Turbidity	1	NTU	2.4	1.1	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	230	210
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	230	210

Client Sample ID			SWL15_1	SWL15_2	QC333	QC334
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ma16676	M17-Ma16677	M17-Ma16678	M17-Ma16679
Date Sampled			Mar 15, 2017	Mar 15, 2017	Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium	0.05	mg/L	0.42	0.44	0.39	2.2
Aluminium (filtered)	0.05	mg/L	0.36	0.37	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.28	0.31	0.66	0.96
Iron (filtered)	0.05	mg/L	0.25	0.26	0.11	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	0.009	0.006	0.008
Manganese (filtered)	0.005	mg/L	0.006	0.007	0.005	0.006
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0005	0.0001	0.0002	0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.018	0.027	0.009	0.006
Zinc (filtered)	0.005	mg/L	0.014	0.014	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	5.5	6.0	94	45
Magnesium	0.5	mg/L	7.5	7.8	60	37
Potassium	0.5	mg/L	3.4	3.8	6.0	2.8
Sodium	0.5	mg/L	52	55	360	300
Pathogens						
E.coli	1	MPN/100mL	63	62	-	-
Thermotolerant Coliforms	1	MPN/100mL	540	440	-	-

Client Sample ID			QC335	QC331
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M17-Ma16680	M17-Ma16681
Date Sampled			Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit		
Acidity (as CaCO3)				
Acidity (as CaCO3)	10	mg/L	13	21
Ammonia (as N)				
Ammonia (as N)	0.01	mg/L	0.22	0.07
Chloride				
Chloride	1	mg/L	430	74
Conductivity (at 25°C)				
Conductivity (at 25°C)	1	uS/cm	1800	400
Nitrate & Nitrite (as N)				
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05
Nitrate (as N)				
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02
Nitrite (as N)				
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02
Organic Nitrogen (as N)				
Organic Nitrogen (as N)	0.2	mg/L	0.2	1.4
pH				
pH	0.1	pH Units	7.8	6.6

Client Sample ID			QC335	QC331
Sample Matrix			Water	Water
Eurofins mgt Sample No.			M17-Ma16680	M17-Ma16681
Date Sampled			Mar 15, 2017	Mar 15, 2017
Test/Reference	LOR	Unit		
Phosphate total (as P)	0.05	mg/L	0.14	2.8
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.16
Sulphate (as SO4)	5	mg/L	23	24
Total Dissolved Solids	10	mg/L	1000	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	1.5
Total Nitrogen (as N)	0.2	mg/L	0.42	1.5
Turbidity	1	NTU	-	540
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	210	40
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	210	40
Heavy Metals				
Aluminium	0.05	mg/L	2.7	7.3
Aluminium (filtered)	0.05	mg/L	< 0.05	0.49
Arsenic	0.001	mg/L	0.013	0.006
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.008	0.017
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	0.004	0.028
Copper (filtered)	0.001	mg/L	< 0.001	0.001
Iron	0.05	mg/L	18	14
Iron (filtered)	0.05	mg/L	< 0.05	2.6
Lead	0.001	mg/L	0.009	0.017
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.058
Manganese (filtered)	0.005	mg/L	< 0.005	0.022
Mercury	0.0001	mg/L	0.0002	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001
Nickel	0.001	mg/L	0.013	0.004
Nickel (filtered)	0.001	mg/L	< 0.001	0.001
Selenium	0.001	mg/L	0.004	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	0.17	0.12
Zinc (filtered)	0.005	mg/L	< 0.005	0.090
Alkali Metals				
Calcium	0.5	mg/L	69	30
Magnesium	0.5	mg/L	42	11
Potassium	0.5	mg/L	5.3	13
Sodium	0.5	mg/L	240	46
Pathogens				
E.coli	1	MPN/100mL	-	320
Thermotolerant Coliforms	1	MPN/100mL	-	4900

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 16, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 16, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 16, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 16, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 16, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 16, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 16, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 16, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 16, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 16, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 16, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 16, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 16, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 16, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 16, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 16, 2017	24 Hour
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 16, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 16, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 16, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 16, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 16, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 16, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 15, 2017 5:00 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538122	Due: Mar 22, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermolabile Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X												X	X	X					X	X	X			X		X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X			X	X					X	X			X		
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
10	SWL18_1	Mar 15, 2017		Water	M17-Ma16665	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	SWL18_2	Mar 15, 2017		Water	M17-Ma16666	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	SWL18_3	Mar 15, 2017		Water	M17-Ma16667	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	SWL22_1	Mar 15, 2017		Water	M17-Ma16668	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	SWL22_2	Mar 15, 2017		Water	M17-Ma16669	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL22_3	Mar 15, 2017		Water	M17-Ma16670	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	SWL16_1	Mar 15, 2017		Water	M17-Ma16671	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL16_2	Mar 15, 2017		Water	M17-Ma16672	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL16_3	Mar 15, 2017		Water	M17-Ma16673	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	QC336	Mar 15, 2017		Water	M17-Ma16674			X	X	X			X			X		X		X	X	X	X	X	X	X	X	X				X								X				
20	QC337	Mar 15, 2017		Water	M17-Ma16675			X	X	X			X			X		X		X	X	X	X	X	X	X	X	X				X								X				
21	SWL15_1	Mar 15, 2017		Water	M17-Ma16676	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

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Project ID: ENAUPERT04483AA	Fax: 08 9470 8601	Contact Name: Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X		X										X	X	X				X	X	X				X		X			
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X		X				
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
22	SWL15_2	Mar 15, 2017		Water	M17-Ma16677	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
23	QC333	Mar 15, 2017		Water	M17-Ma16678	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
24	QC334	Mar 15, 2017		Water	M17-Ma16679	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
25	QC335	Mar 15, 2017		Water	M17-Ma16680	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
26	QC331	Mar 15, 2017		Water	M17-Ma16681	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts					24	24	26	24	26	24	26	24	24	26	24	24	26	12	24	26	24	26	24	26	24	26	24	26	24	24	24	24	24	24	24	12	24	12	24	26	24	24	24		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	118			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	88			70-130	Pass		
Chloride	%	112			70-130	Pass		
Nitrate & Nitrite (as N)	%	104			70-130	Pass		
Nitrate (as N)	%	103			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Phosphate total (as P)	%	87			70-130	Pass		
Phosphorus reactive (as P)	%	126			70-130	Pass		
Sulphate (as SO4)	%	118			70-130	Pass		
Total Dissolved Solids	%	104			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	76			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	91			70-130	Pass		
Total Alkalinity (as CaCO3)	%	91			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	89			70-130	Pass		
Aluminium (filtered)	%	92			70-130	Pass		
Arsenic	%	95			70-130	Pass		
Arsenic (filtered)	%	97			70-130	Pass		
Cadmium	%	97			70-130	Pass		
Cadmium (filtered)	%	101			70-130	Pass		
Chromium	%	95			70-130	Pass		
Chromium (filtered)	%	96			70-130	Pass		
Copper	%	93			70-130	Pass		
Copper (filtered)	%	96			70-130	Pass		
Iron	%	95			70-130	Pass		
Iron (filtered)	%	104			70-130	Pass		
Lead	%	95			70-130	Pass		
Lead (filtered)	%	98			70-130	Pass		
Manganese	%	93			70-130	Pass		
Manganese (filtered)	%	96			70-130	Pass		
Mercury	%	99			70-130	Pass		
Mercury (filtered)	%	94			70-130	Pass		
Nickel	%	93			70-130	Pass		
Nickel (filtered)	%	95			70-130	Pass		
Selenium	%	102			70-130	Pass		
Selenium (filtered)	%	103			70-130	Pass		
Zinc	%	97			70-130	Pass		
Zinc (filtered)	%	95			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	103			70-130	Pass		
Magnesium	%	107			70-130	Pass		
Potassium	%	100			70-130	Pass		
Sodium	%	108			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M17-Ma15296	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	M17-Ma16657	CP	%	94		70-130	Pass	
Aluminium (filtered)	M17-Ma16657	CP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M17-Ma16657	CP	%	98		70-130	Pass	
Arsenic (filtered)	M17-Ma16657	CP	%	104		70-130	Pass	
Cadmium	M17-Ma16657	CP	%	99		70-130	Pass	
Cadmium (filtered)	M17-Ma16657	CP	%	105		70-130	Pass	
Chromium	M17-Ma16657	CP	%	97		70-130	Pass	
Chromium (filtered)	M17-Ma16657	CP	%	103		70-130	Pass	
Copper	M17-Ma16657	CP	%	95		70-130	Pass	
Copper (filtered)	M17-Ma16657	CP	%	101		70-130	Pass	
Iron	M17-Ma16657	CP	%	99		70-130	Pass	
Iron (filtered)	M17-Ma16657	CP	%	119		70-130	Pass	
Lead	M17-Ma16657	CP	%	95		70-130	Pass	
Lead (filtered)	M17-Ma16657	CP	%	102		70-130	Pass	
Manganese	M17-Ma16657	CP	%	96		70-130	Pass	
Manganese (filtered)	M17-Ma16657	CP	%	101		70-130	Pass	
Mercury	M17-Ma16657	CP	%	103		70-130	Pass	
Mercury (filtered)	M17-Ma16657	CP	%	90		70-130	Pass	
Nickel	M17-Ma16657	CP	%	94		70-130	Pass	
Nickel (filtered)	M17-Ma16657	CP	%	101		70-130	Pass	
Selenium	M17-Ma16657	CP	%	105		70-130	Pass	
Selenium (filtered)	M17-Ma16657	CP	%	102		70-130	Pass	
Zinc	M17-Ma16657	CP	%	94		70-130	Pass	
Zinc (filtered)	M17-Ma16657	CP	%	103		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M17-Ma16657	CP	%	111		70-130	Pass	
Magnesium	M17-Ma16657	CP	%	112		70-130	Pass	
Potassium	M17-Ma16657	CP	%	118		70-130	Pass	
Sodium	M17-Ma16657	CP	%	129		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ma16661	CP	%	91		70-130	Pass	
Chloride	M17-Ma16661	CP	%	109		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ma16661	CP	%	106		70-130	Pass	
Nitrate (as N)	M17-Ma16661	CP	%	106		70-130	Pass	
Nitrite (as N)	M17-Ma16661	CP	%	102		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M17-Ma16663	CP	%	116		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	M17-Ma16664	CP	%	124		70-130	Pass	
Sulphate (as SO4)	M17-Ma16664	CP	%	117		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ma16671	CP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ma16671	CP	%	105		70-130	Pass	
Nitrate (as N)	M17-Ma16671	CP	%	105		70-130	Pass	
Nitrite (as N)	M17-Ma16671	CP	%	101		70-130	Pass	
Spike - % Recovery								
				Result 1				
Total Kjeldahl Nitrogen (as N)	M17-Ma17199	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron (filtered)	M17-Ma16677	CP	%	109		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M17-Ma16679	CP	%	92			70-130	Pass	
Cadmium	M17-Ma16679	CP	%	95			70-130	Pass	
Chromium	M17-Ma16679	CP	%	88			70-130	Pass	
Copper	M17-Ma16679	CP	%	84			70-130	Pass	
Iron	M17-Ma16679	CP	%	86			70-130	Pass	
Lead	M17-Ma16679	CP	%	86			70-130	Pass	
Manganese	M17-Ma16679	CP	%	89			70-130	Pass	
Mercury	M17-Ma16679	CP	%	92			70-130	Pass	
Nickel	M17-Ma16679	CP	%	84			70-130	Pass	
Selenium	M17-Ma16679	CP	%	93			70-130	Pass	
Zinc	M17-Ma16679	CP	%	85			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ma16656	CP	mg/L	31	29	5.0	30%	Pass	
pH	B17-Ma14122	NCP	pH Units	8.5	8.5	pass	30%	Pass	
Total Dissolved Solids	M17-Ma14959	NCP	mg/L	1700	1800	4.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ma15295	NCP	mg/L	0.3	0.3	1.6	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ma16656	CP	mg/L	0.30	0.33	7.0	30%	Pass	
Aluminium (filtered)	M17-Ma16656	CP	mg/L	0.23	0.23	1.0	30%	Pass	
Cadmium (filtered)	S17-Ma17772	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M17-Ma16656	CP	mg/L	0.002	0.002	7.0	30%	Pass	
Chromium (filtered)	M17-Ma16656	CP	mg/L	0.001	0.001	3.0	30%	Pass	
Copper	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Ma16656	CP	mg/L	0.11	0.13	9.0	30%	Pass	
Iron (filtered)	M17-Ma16656	CP	mg/L	0.11	0.11	<1	30%	Pass	
Lead	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ma16656	CP	mg/L	0.008	0.009	7.0	30%	Pass	
Manganese (filtered)	M17-Ma16656	CP	mg/L	0.008	0.009	1.0	30%	Pass	
Mercury (filtered)	S17-Ma17425	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	M17-Ma16656	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M17-Ma16656	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Ma16656	CP	mg/L	26	28	5.0	30%	Pass	
Magnesium	M17-Ma16656	CP	mg/L	5.4	5.7	6.0	30%	Pass	
Potassium	M17-Ma16656	CP	mg/L	2.9	3.0	3.0	30%	Pass	
Sodium	M17-Ma16656	CP	mg/L	37	39	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	M17-Ma16657	CP	mg/L	95	92	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M17-Ma16660	CP	mg/L	120	120	<1	30%	Pass	
Conductivity (at 25°C)	M17-Ma16660	CP	uS/cm	550	550	2.0	30%	Pass	
Sulphate (as SO ₄)	M17-Ma16660	CP	mg/L	15	15	<1	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ma16660	CP	mg/L	55	54	2.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ma16660	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ma16660	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ma16660	CP	mg/L	55	54	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ma16661	CP	mg/L	1.0	1.0	1.0	30%	Pass
Nitrate & Nitrite (as N)	M17-Ma16661	CP	mg/L	0.96	0.96	<1	30%	Pass
Nitrate (as N)	M17-Ma16661	CP	mg/L	0.94	0.95	<1	30%	Pass
Nitrite (as N)	M17-Ma16661	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Ma16663	CP	mg/L	670	660	1.2	30%	Pass
Phosphorus reactive (as P)	M17-Ma16663	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as SO ₄)	M17-Ma16663	CP	mg/L	11	12	2.5	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ma16664	CP	mg/L	0.08	0.10	19	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M17-Ma16664	CP	mg/L	0.001	0.001	5.0	30%	Pass
Cadmium	M17-Ma16664	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Copper	M17-Ma16664	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead	M17-Ma16664	CP	mg/L	0.001	< 0.001	9.0	30%	Pass
Manganese	M17-Ma16664	CP	mg/L	0.008	0.008	6.0	30%	Pass
Nickel	M17-Ma16664	CP	mg/L	0.001	0.001	14	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ma16664	CP	mg/L	46	48	3.0	30%	Pass
Magnesium	M17-Ma16664	CP	mg/L	37	38	4.0	30%	Pass
Potassium	M17-Ma16664	CP	mg/L	3.0	2.9	5.0	30%	Pass
Sodium	M17-Ma16664	CP	mg/L	290	320	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-Ma16666	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	M17-Ma16666	CP	mg/L	0.001	0.001	1.0	30%	Pass
Chromium (filtered)	M17-Ma16666	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M17-Ma16666	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M17-Ma16666	CP	mg/L	0.94	0.96	2.0	30%	Pass
Lead (filtered)	M17-Ma16666	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M17-Ma16666	CP	mg/L	0.098	0.098	<1	30%	Pass
Nickel (filtered)	M17-Ma16666	CP	mg/L	0.002	0.002	3.0	30%	Pass
Selenium (filtered)	M17-Ma16666	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M17-Ma16666	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M17-Ma16671	CP	mg/L	0.02	0.02	15	30%	Pass
Nitrate & Nitrite (as N)	M17-Ma16671	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ma16671	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M17-Ma16671	CP	mg/L	0.03	0.03	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Ma16672	CP	NTU	18	17	6.0	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Chloride	M17-Ma16676	CP	mg/L	76	93	20	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-Ma16676	CP	mg/L	0.36	0.37	2.0	30%	Pass
Chromium (filtered)	M17-Ma16676	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M17-Ma16676	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M17-Ma16676	CP	mg/L	0.25	0.26	5.0	30%	Pass
Lead (filtered)	M17-Ma16676	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M17-Ma16676	CP	mg/L	0.006	0.007	2.0	30%	Pass
Zinc (filtered)	M17-Ma16676	CP	mg/L	0.014	0.014	5.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Ma16678	CP	mg/L	0.39	0.38	2.0	30%	Pass
Chromium	M17-Ma16678	CP	mg/L	0.002	0.002	6.0	30%	Pass
Copper	M17-Ma16678	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M17-Ma16678	CP	mg/L	0.66	0.66	<1	30%	Pass
Lead	M17-Ma16678	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-Ma16678	CP	mg/L	0.006	0.006	5.0	30%	Pass
Nickel	M17-Ma16678	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	M17-Ma16678	CP	mg/L	0.009	0.009	4.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ma16678	CP	mg/L	94	91	3.0	30%	Pass
Magnesium	M17-Ma16678	CP	mg/L	60	57	5.0	30%	Pass
Potassium	M17-Ma16678	CP	mg/L	6.0	5.9	1.0	30%	Pass
Sodium	M17-Ma16678	CP	mg/L	360	350	3.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 16, 2017 4:00 PM**
Eurofins | mgt reference: **538272**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

No micro bottle received for sample MW42, could not log for E.coli or Thermotolerant bacteria

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 16, 2017 4:00 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538272	Due: Mar 23, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	The motile Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X					X	X	X			X		X
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X						X	X		X
Brisbane Laboratory - NATA Site # 20794																																											
Perth Laboratory - NATA Site # 18217																																											
10	MW20	Mar 16, 2017		Water	P17-Ma17833	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
11	MW21	Mar 16, 2017		Water	P17-Ma17834	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW40	Mar 16, 2017		Water	P17-Ma17835	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
13	MW41	Mar 16, 2017		Water	P17-Ma17836	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
14	MW42	Mar 16, 2017		Water	P17-Ma17837	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL17-1	Mar 16, 2017		Water	P17-Ma17838	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	QC338	Mar 16, 2017		Water	P17-Ma17839	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	QC339	Mar 16, 2017		Water	P17-Ma17840			X	X	X				X						X	X	X	X	X	X	X	X							X						X			
18	QC340	Mar 16, 2017		Water	P17-Ma17841			X	X	X				X						X	X	X	X	X	X	X	X							X						X			
Test Counts						16	16	18	16	18	16	18	16	16	18	16	16	18	1	16	18	16	18	16	18	16	18	16	18	16	16	16	16	18	16	1	16	2	16	18	15	16	16

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **538272-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Mar 16, 2017

Client Sample ID			MW24 Water P17-Ma17824 Mar 16, 2017	MW25 Water P17-Ma17825 Mar 16, 2017	MW26 Water P17-Ma17826 Mar 16, 2017	MW27 Water P17-Ma17827 Mar 16, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	77	57	76	59
Ammonia (as N)	0.01	mg/L	0.10	0.11	0.05	0.18
Chloride	1	mg/L	180	61	120	54
Conductivity (at 25°C)	1	uS/cm	700	380	540	180
Nitrate & Nitrite (as N)	0.05	mg/L	0.67	9.9	0.83	< 0.05
Nitrate (as N)	0.02	mg/L	0.67	9.9	0.82	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.4	0.6	1.0
pH	0.1	pH Units	4.2	4.3	3.9	4.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	56	30	40	17
Total Dissolved Solids	10	mg/L	570	290	430	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.5	0.7	1.2
Total Nitrogen (as N)	0.2	mg/L	0.67	10	1.5	1.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.5	1.2	1.9	^{R05} 0.97
Aluminium (filtered)	0.05	mg/L	1.5	1.2	1.7	1.00
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.003	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Iron	0.05	mg/L	0.31	0.09	0.30	1.2
Iron (filtered)	0.05	mg/L	0.23	0.07	0.22	1.1
Lead	0.001	mg/L	< 0.001	^{R05} < 0.001	^{R05} < 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.001	0.001	< 0.001

Client Sample ID			MW24 Water	MW25 Water	MW26 Water	MW27 Water
Sample Matrix			P17-Ma17824	P17-Ma17825	P17-Ma17826	P17-Ma17827
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	^{R05} 0.009	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.011	< 0.005	< 0.005
Mercury	0.0001	mg/L	^{R05} < 0.0001	< 0.0001	^{R05} < 0.0001	0.0001
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Nickel	0.001	mg/L	^{R05} 0.001	< 0.001	< 0.001	^{R05} < 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	^{R05} 0.001	^{R05} < 0.001
Selenium (filtered)	0.001	mg/L	^{R05} 0.002	< 0.001	0.003	0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	9.0	10.0	8.9	2.1
Magnesium	0.5	mg/L	21	11	12	3.9
Potassium	0.5	mg/L	2.2	5.2	2.5	2.8
Sodium	0.5	mg/L	100	36	81	21

Client Sample ID			MW18 Water	MW17 Water	MW29 Water	MW30 Water
Sample Matrix			P17-Ma17828	P17-Ma17829	P17-Ma17830	P17-Ma17831
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	63	69	65	22
Ammonia (as N)	0.01	mg/L	0.09	0.05	0.06	< 0.01
Chloride	1	mg/L	87	35	30	29
Conductivity (at 25°C)	1	uS/cm	380	240	170	200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	2.6
Nitrate (as N)	0.02	mg/L	0.02	< 0.02	< 0.02	2.6
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.3	1.1	0.6
pH	0.1	pH Units	5.2	4.7	4.8	6.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	26	39	26	11
Total Dissolved Solids	10	mg/L	230	180	320	190
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	1.3	0.6
Total Nitrogen (as N)	0.2	mg/L	0.4	0.4	1.3	3.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	26
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	26
Heavy Metals						
Aluminium	0.05	mg/L	1.6	^{R05} 1.6	2.1	0.43
Aluminium (filtered)	0.05	mg/L	1.2	1.9	2.0	0.43
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW18 Water	MW17 Water	MW29 Water	MW30 Water
Sample Matrix			P17-Ma17828	P17-Ma17829	P17-Ma17830	P17-Ma17831
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	^{R05} 0.003	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.005	0.003	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.003	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Iron	0.05	mg/L	1.5	2.2	^{R05} 0.21	^{R05} 0.06
Iron (filtered)	0.05	mg/L	1.1	2.2	0.23	0.07
Lead	0.001	mg/L	0.001	^{R05} 0.005	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	0.001	0.012	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.005	^{R05} < 0.005	< 0.005	0.009
Zinc (filtered)	0.005	mg/L	< 0.005	0.013	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.6	3.0	4.0	16
Magnesium	0.5	mg/L	5.0	2.6	5.2	2.2
Potassium	0.5	mg/L	1.5	1.1	1.3	0.6
Sodium	0.5	mg/L	50	23	23	16

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW40 Water
Sample Matrix			P17-Ma17832	P17-Ma17833	P17-Ma17834	P17-Ma17835
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	310	82	80	58
Ammonia (as N)	0.01	mg/L	< 0.01	0.03	0.04	0.21
Chloride	1	mg/L	140	46	57	89
Conductivity (at 25°C)	1	uS/cm	760	280	340	310
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.81	3.3	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.81	3.3	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	2.7	< 0.2	0.6	0.9
pH	0.1	pH Units	3.5	4.3	4.1	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	110	48	50	33
Total Dissolved Solids	10	mg/L	540	210	230	340
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.7	< 0.2	0.6	1.1
Total Nitrogen (as N)	0.2	mg/L	2.7	0.81	3.9	1.1

Client Sample ID			MW19 Water	MW20 Water	MW21 Water	MW40 Water
Sample Matrix			P17-Ma17832	P17-Ma17833	P17-Ma17834	P17-Ma17835
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	23	^{R05} 7.9	^{R05} 6.4	1.4
Aluminium (filtered)	0.05	mg/L	20	8.9	6.7	1.2
Arsenic	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.006	0.001	< 0.001	0.003
Chromium (filtered)	0.001	mg/L	0.005	0.001	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	^{R05} 0.39	0.49	11	0.40
Iron (filtered)	0.05	mg/L	0.41	0.22	6.4	0.40
Lead	0.001	mg/L	0.004	^{R05} < 0.001	^{R05} < 0.001	0.002
Lead (filtered)	0.001	mg/L	0.003	0.001	0.001	0.002
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	^{R05} 0.010	0.005	0.006	^{R05} 0.003
Nickel (filtered)	0.001	mg/L	0.011	0.005	0.006	0.004
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	< 0.005	0.008	0.014
Zinc (filtered)	0.005	mg/L	0.007	< 0.005	< 0.005	0.008
Alkali Metals						
Calcium	0.5	mg/L	1.4	< 0.5	4.0	2.5
Magnesium	0.5	mg/L	4.1	2.3	4.8	6.2
Potassium	0.5	mg/L	1.2	< 0.5	3.8	2.0
Sodium	0.5	mg/L	73	35	52	51

Client Sample ID			MW41 Water	MW42 Water	SWL17-1 Water	QC338 Water
Sample Matrix			P17-Ma17836	P17-Ma17837	P17-Ma17838	P17-Ma17839
Eurofins mgt Sample No.			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	120	42	49	75
Ammonia (as N)	0.01	mg/L	0.48	0.24	0.02	0.08
Chloride	1	mg/L	200	54	80	97
Conductivity (at 25°C)	1	uS/cm	750	200	330	380
Nitrate & Nitrite (as N)	0.05	mg/L	2.6	< 0.05	< 0.05	0.05
Nitrate (as N)	0.02	mg/L	2.6	< 0.02	< 0.02	0.05
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			MW41	MW42	SWL17-1	QC338
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma17836	P17-Ma17837	P17-Ma17838	P17-Ma17839
Date Sampled			Mar 16, 2017	Mar 16, 2017	Mar 16, 2017	Mar 16, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	1.8	0.5	1.1	0.2
pH	0.1	pH Units	3.6	4.3	4.0	4.8
Phosphate total (as P)	0.05	mg/L	0.64	< 0.05	0.14	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.68	< 0.05	0.10	< 0.05
Sulphate (as SO4)	5	mg/L	23	5.2	12	27
Total Dissolved Solids	10	mg/L	720	200	300	240
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.3	0.7	1.1	0.3
Total Nitrogen (as N)	0.2	mg/L	4.9	0.7	1.1	0.4
Turbidity	1	NTU	-	41	43	-
E.coli	1	MPN/100mL	-	-	20	-
Thermotolerant Coliforms	1	MPN/100mL	-	-	610	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Heavy Metals						
Aluminium	0.05	mg/L	1.4	0.32	0.48	^{R05} 2.8
Aluminium (filtered)	0.05	mg/L	1.2	0.27	0.42	3.2
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	0.00013	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	0.00017	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.51	0.13	0.21	^{R05} 4.7
Iron (filtered)	0.05	mg/L	0.45	0.13	0.20	5.5
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.006
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	0.006	0.005	0.007
Zinc (filtered)	0.005	mg/L	0.006	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	10	1.5	2.6	3.8
Magnesium	0.5	mg/L	13	3.6	6.4	4.8
Potassium	0.5	mg/L	3.0	1.1	1.8	1.5
Sodium	0.5	mg/L	99	27	39	48

Client Sample ID			QC339	QC340
Sample Matrix			Water	Water
Eurofins mgt Sample No.			P17-Ma17840	P17-Ma17841
Date Sampled			Mar 16, 2017	Mar 16, 2017
Test/Reference	LOR	Unit		
Heavy Metals				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 17, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 17, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 17, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 17, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 17, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 17, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 17, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 17, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 17, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 17, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 17, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 17, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 21, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 21, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 21, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 21, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 17, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 17, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 17, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 17, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 16, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 17, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 16, 2017 4:00 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538272	Due: Mar 23, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X												X		X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X								X	X		X	
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
External Laboratory																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																										
1	MW24	Mar 16, 2017		Water	P17-Ma17824	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW25	Mar 16, 2017		Water	P17-Ma17825	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
3	MW26	Mar 16, 2017		Water	P17-Ma17826	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
4	MW27	Mar 16, 2017		Water	P17-Ma17827	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5	MW18	Mar 16, 2017		Water	P17-Ma17828	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
6	MW17	Mar 16, 2017		Water	P17-Ma17829	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	MW29	Mar 16, 2017		Water	P17-Ma17830	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
8	MW30	Mar 16, 2017		Water	P17-Ma17831	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9	MW19	Mar 16, 2017		Water	P17-Ma17832	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 16, 2017 4:00 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538272	Due: Mar 23, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermolabile Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X												X	X	X						X	X						X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X			X	X	X	X	X	X	X	X	X	X				X	X							X	X			X	
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
10	MW20	Mar 16, 2017		Water	P17-Ma17833	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW21	Mar 16, 2017		Water	P17-Ma17834	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	MW40	Mar 16, 2017		Water	P17-Ma17835	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	MW41	Mar 16, 2017		Water	P17-Ma17836	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	MW42	Mar 16, 2017		Water	P17-Ma17837	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15	SWL17-1	Mar 16, 2017		Water	P17-Ma17838	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16	QC338	Mar 16, 2017		Water	P17-Ma17839	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17	QC339	Mar 16, 2017		Water	P17-Ma17840			X	X	X				X						X	X	X	X	X	X	X	X	X							X								X				
18	QC340	Mar 16, 2017		Water	P17-Ma17841			X	X	X				X						X	X	X	X	X	X	X	X	X							X								X				
Test Counts						16	16	18	16	18	16	18	16	16	18	16	16	18	1	16	18	16	18	16	18	16	18	16	18	16	18	16	16	16	16	18	16	1	16	2	16	18	15	16	16		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	112			70-130	Pass		
Ammonia (as N)	%	90			70-130	Pass		
Chloride	%	128			70-130	Pass		
Nitrate & Nitrite (as N)	%	93			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	95			70-130	Pass		
Phosphate total (as P)	%	89			70-130	Pass		
Phosphorus reactive (as P)	%	119			70-130	Pass		
Sulphate (as SO ₄)	%	122			70-130	Pass		
Total Dissolved Solids	%	115			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	87			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	86			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	91			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	94			70-130	Pass		
Aluminium (filtered)	%	98			70-130	Pass		
Arsenic	%	99			70-130	Pass		
Arsenic (filtered)	%	106			70-130	Pass		
Cadmium	%	94			70-130	Pass		
Cadmium (filtered)	%	107			70-130	Pass		
Chromium	%	99			70-130	Pass		
Chromium (filtered)	%	109			70-130	Pass		
Copper	%	102			70-130	Pass		
Copper (filtered)	%	110			70-130	Pass		
Iron	%	106			70-130	Pass		
Iron (filtered)	%	101			70-130	Pass		
Lead	%	101			70-130	Pass		
Lead (filtered)	%	113			70-130	Pass		
Manganese	%	94			70-130	Pass		
Manganese (filtered)	%	106			70-130	Pass		
Mercury	%	95			70-130	Pass		
Mercury (filtered)	%	110			70-130	Pass		
Nickel	%	99			70-130	Pass		
Nickel (filtered)	%	108			70-130	Pass		
Selenium	%	87			70-130	Pass		
Selenium (filtered)	%	100			70-130	Pass		
Zinc	%	104			70-130	Pass		
Zinc (filtered)	%	109			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	106			70-130	Pass		
Magnesium	%	102			70-130	Pass		
Potassium	%	101			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	M17-Ma18427	NCP	%	89		70-130	Pass	
Sulphate (as SO ₄)	M17-Ma16971	NCP	%	111		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Aluminium	P17-Ma19254	NCP	%	119		70-130	Pass	
Arsenic	S17-Ma12252	NCP	%	79		70-130	Pass	
Cadmium	S17-Ma12252	NCP	%	81		70-130	Pass	
Chromium	S17-Ma12252	NCP	%	80		70-130	Pass	
Copper	S17-Ma12252	NCP	%	76		70-130	Pass	
Iron	S17-Ma21380	NCP	%	102		70-130	Pass	
Lead	S17-Ma12252	NCP	%	73		70-130	Pass	
Manganese	P17-Ma19254	NCP	%	92		70-130	Pass	
Mercury	S17-Ma12252	NCP	%	77		70-130	Pass	
Nickel	S17-Ma12252	NCP	%	75		70-130	Pass	
Selenium	P17-Ma19254	NCP	%	87		70-130	Pass	
Zinc	S17-Ma12252	NCP	%	77		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	P17-Ma17825	CP	%	116		70-130	Pass	
Arsenic (filtered)	P17-Ma17825	CP	%	110		70-130	Pass	
Cadmium (filtered)	P17-Ma17825	CP	%	112		70-130	Pass	
Chromium (filtered)	P17-Ma17825	CP	%	116		70-130	Pass	
Copper (filtered)	P17-Ma17825	CP	%	116		70-130	Pass	
Iron (filtered)	P17-Ma17825	CP	%	102		70-130	Pass	
Lead (filtered)	P17-Ma17825	CP	%	118		70-130	Pass	
Manganese (filtered)	P17-Ma17825	CP	%	113		70-130	Pass	
Mercury (filtered)	P17-Ma17825	CP	%	113		70-130	Pass	
Nickel (filtered)	P17-Ma17825	CP	%	113		70-130	Pass	
Selenium (filtered)	P17-Ma17825	CP	%	100		70-130	Pass	
Zinc (filtered)	P17-Ma17825	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	P17-Ma17826	CP	%	95		70-130	Pass	
Total Alkalinity (as CaCO3)	P17-Ma17826	CP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	P17-Ma17828	CP	%	36		70-130	Fail	Q08
Spike - % Recovery								
				Result 1				
Chloride	P17-Ma17830	CP	%	110		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ma17831	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ma17831	CP	%	80		70-130	Pass	
Nitrate (as N)	P17-Ma17831	CP	%	80		70-130	Pass	
Nitrite (as N)	P17-Ma17831	CP	%	96		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	P17-Ma17832	CP	%	102		70-130	Pass	
Magnesium	P17-Ma17832	CP	%	101		70-130	Pass	
Potassium	P17-Ma17832	CP	%	102		70-130	Pass	
Sodium	P17-Ma17832	CP	%	78		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ma17833	CP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ma17833	CP	%	89		70-130	Pass	
Nitrate (as N)	P17-Ma17833	CP	%	87		70-130	Pass	
Nitrite (as N)	P17-Ma17833	CP	%	96		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma17836	CP	%	83			70-130	Pass	
Total Alkalinity (as CaCO ₃)	P17-Ma17836	CP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	P17-Ma17824	CP	mg/L	1.5	1.6	<1	30%	Pass	
Cadmium (filtered)	P17-Ma17824	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium (filtered)	P17-Ma17824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	P17-Ma17824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	P17-Ma17824	CP	mg/L	0.23	0.23	<1	30%	Pass	
Lead (filtered)	P17-Ma17824	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	P17-Ma17824	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	P17-Ma17824	CP	mg/L	0.002	0.002	1.0	30%	Pass	
Selenium	P17-Ma19263	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S17-Ma12230	NCP	mg/L	0.20	0.18	11	30%	Pass	
Zinc (filtered)	P17-Ma17824	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	P17-Ma17825	CP	uS/cm	380	380	<1	30%	Pass	
pH	P17-Ma17825	CP	pH Units	4.3	4.3	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma17825	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	P17-Ma17825	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma17825	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	P17-Ma17825	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	P17-Ma17826	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	P17-Ma17826	CP	mg/L	430	450	5.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P17-Ma17826	CP	mg/L	0.7	0.8	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	P17-Ma17827	CP	mg/L	0.09	0.08	7.0	30%	Pass	
Phosphorus reactive (as P)	P17-Ma17827	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P17-Ma17827	CP	mg/L	1.2	1.4	12	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	P17-Ma17829	CP	mg/L	35	32	7.7	30%	Pass	
Sulphate (as SO ₄)	P17-Ma17829	CP	mg/L	39	38	2.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P17-Ma17830	CP	mg/L	65	65	1.0	30%	Pass	
Conductivity (at 25°C)	P17-Ma17830	CP	uS/cm	170	160	8.0	30%	Pass	
pH	P17-Ma17830	CP	pH Units	4.8	4.8	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma17830	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	P17-Ma17830	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma17830	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	P17-Ma17830	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	P17-Ma17831	CP	mg/L	22	22	1.0	30%	Pass
Ammonia (as N)	P17-Ma17831	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Chloride	P17-Ma17831	CP	mg/L	29	30	3.6	30%	Pass
Nitrate & Nitrite (as N)	P17-Ma17831	CP	mg/L	2.6	2.6	1.0	30%	Pass
Nitrate (as N)	P17-Ma17831	CP	mg/L	2.6	2.6	1.0	30%	Pass
Nitrite (as N)	P17-Ma17831	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phosphorus reactive (as P)	P17-Ma17831	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as SO ₄)	P17-Ma17831	CP	mg/L	11	11	2.2	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	P17-Ma17831	CP	mg/L	0.43	0.43	<1	30%	Pass
Arsenic	P17-Ma17831	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	P17-Ma17831	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	P17-Ma17831	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	P17-Ma17831	CP	mg/L	0.002	0.002	18	30%	Pass
Iron	P17-Ma17831	CP	mg/L	0.06	0.06	14	30%	Pass
Lead	P17-Ma17831	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	P17-Ma17831	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	P17-Ma17831	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	P17-Ma17831	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ma17831	CP	mg/L	16	16	4.0	30%	Pass
Magnesium	P17-Ma17831	CP	mg/L	2.2	2.3	4.0	30%	Pass
Potassium	P17-Ma17831	CP	mg/L	0.6	0.6	<1	30%	Pass
Sodium	P17-Ma17831	CP	mg/L	16	17	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ma17833	CP	mg/L	0.03	0.03	19	30%	Pass
Nitrate & Nitrite (as N)	P17-Ma17833	CP	mg/L	0.81	0.82	1.0	30%	Pass
Nitrate (as N)	P17-Ma17833	CP	mg/L	0.81	0.82	1.0	30%	Pass
Nitrite (as N)	P17-Ma17833	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P17-Ma17834	CP	mg/L	6.7	6.6	2.0	30%	Pass
Arsenic (filtered)	P17-Ma17834	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P17-Ma17834	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P17-Ma17834	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P17-Ma17834	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	P17-Ma17834	CP	mg/L	6.4	6.4	<1	30%	Pass
Lead (filtered)	P17-Ma17834	CP	mg/L	0.001	0.001	5.0	30%	Pass
Manganese (filtered)	P17-Ma17834	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	P17-Ma17834	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	P17-Ma17834	CP	mg/L	0.006	0.006	1.0	30%	Pass
Selenium (filtered)	P17-Ma17834	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P17-Ma17834	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ma17835	CP	uS/cm	310	350	10	30%	Pass
pH	P17-Ma17835	CP	pH Units	4.2	4.2	pass	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma17835	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ma17835	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma17835	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ma17835	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Turbidity	P17-Ma17837	CP	NTU	41	41	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	P17-Ma17838	CP	mg/L	80	79	1.2	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	P17-Ma17839	CP	mg/L	97	93	3.5	30%	Pass
Sulphate (as SO ₄)	P17-Ma17839	CP	mg/L	27	27	1.4	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 17, 2017 4:21 PM**
Eurofins | mgt reference: **538465**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Sample MW1 received and not on COC logged for testing at client request.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 17, 2017 4:21 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538465	Due: Mar 24, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X													X	X	X			X	X			X	X		
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X			X	X		X		
Brisbane Laboratory - NATA Site # 20794																																								
Perth Laboratory - NATA Site # 18217																																								
10	MW23	Mar 17, 2017		Water	P17-Ma19262	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	QC341	Mar 17, 2017		Water	P17-Ma19263	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC342	Mar 17, 2017		Water	P17-Ma19264			X		X				X			X		X			X		X												X				
13	QC343	Mar 17, 2017		Water	P17-Ma19265			X		X				X			X		X			X		X												X				
14	MW1	Mar 17, 2017		Water	P17-Ma19266	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						12	12	14	12	14	12	14	12	12	14	12	12	14	12	14	12	14	12	14	12	14	12	12	12	12	12	14	12	12	12	14	12	12	12	12

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **538465-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Mar 17, 2017

Client Sample ID			MW9 Water P17-Ma19253 Mar 17, 2017	MW10 Water P17-Ma19254 Mar 17, 2017	MW11 Water P17-Ma19255 Mar 17, 2017	MW12 Water P17-Ma19256 Mar 17, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	40	37	80	38
Ammonia (as N)	0.01	mg/L	0.07	0.09	0.04	0.02
Chloride	1	mg/L	15	20	84	35
Conductivity (at 25°C)	1	uS/cm	130	310	470	200
Nitrate & Nitrite (as N)	0.05	mg/L	0.77	1.5	0.20	< 0.05
Nitrate (as N)	0.02	mg/L	0.75	1.4	0.18	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	0.3	0.3	< 0.2
pH	0.1	pH Units	5.1	6.8	4.2	4.3
Phosphate total (as P)	0.05	mg/L	< 0.05	0.08	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	13	16	80	23
Total Dissolved Solids	10	mg/L	130	280	360	150
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	0.4	0.3	< 0.2
Total Nitrogen (as N)	0.2	mg/L	0.77	1.9	0.5	< 0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	110	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	110	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.51	0.31	5.1	1.9
Aluminium (filtered)	0.05	mg/L	0.36	< 0.05	5.0	1.8
Arsenic	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.002	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.9	3.6	1.5	1.0
Iron (filtered)	0.05	mg/L	1.5	0.30	0.39	0.26
Lead	0.001	mg/L	< 0.001	< 0.001	0.004	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001

Client Sample ID			MW9 Water	MW10 Water	MW11 Water	MW12 Water
Sample Matrix			P17-Ma19253	P17-Ma19254	P17-Ma19255	P17-Ma19256
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017	Mar 17, 2017	Mar 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	^{R05} < 0.0001	< 0.0001	^{R05} < 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	0.0002	< 0.0001	0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.005	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.005	0.002
Selenium	0.001	mg/L	^{R05} < 0.001	< 0.001	^{R05} < 0.001	^{R05} 0.002
Selenium (filtered)	0.001	mg/L	0.003	< 0.001	0.003	0.004
Zinc	0.005	mg/L	0.007	0.011	< 0.005	^{R05} < 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Alkali Metals						
Calcium	0.5	mg/L	6.2	51	< 0.5	< 0.5
Magnesium	0.5	mg/L	1.5	4.3	14	2.7
Potassium	0.5	mg/L	0.6	1.2	< 0.5	< 0.5
Sodium	0.5	mg/L	8.6	6.8	46	20

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			P17-Ma19257	P17-Ma19258	P17-Ma19259	P17-Ma19260
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017	Mar 17, 2017	Mar 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	54	46	43	92
Ammonia (as N)	0.01	mg/L	0.07	< 0.01	0.19	0.09
Chloride	1	mg/L	45	42	44	55
Conductivity (at 25°C)	1	uS/cm	280	230	330	370
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.71	< 0.05	0.67
Nitrate (as N)	0.02	mg/L	< 0.02	0.70	< 0.02	0.66
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.5	< 0.2	0.5
pH	0.1	pH Units	4.0	4.6	3.9	3.9
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	32	25	55	51
Total Dissolved Solids	10	mg/L	220	250	260	270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.5	0.3	0.6
Total Nitrogen (as N)	0.2	mg/L	0.3	1.2	0.3	1.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.4	2.8	0.48	2.9
Aluminium (filtered)	0.05	mg/L	1.3	0.73	0.31	3.1
Arsenic	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	0.00016	< 0.00005	< 0.00005

Client Sample ID			MW13 Water	MW14 Water	MW15 Water	MW16 Water
Sample Matrix			P17-Ma19257	P17-Ma19258	P17-Ma19259	P17-Ma19260
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017	Mar 17, 2017	Mar 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.22	9.3	0.012	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	0.004	< 0.001	0.003
Copper	0.001	mg/L	0.003	0.072	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	6.4	32	6.2	11
Iron (filtered)	0.05	mg/L	1.1	0.99	0.29	5.1
Lead	0.001	mg/L	< 0.001	^{R05} 0.004	^{R05} < 0.001	0.012
Lead (filtered)	0.001	mg/L	< 0.001	0.006	0.001	0.012
Manganese	0.005	mg/L	0.016	0.40	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.12	3.2	0.004	0.001
Nickel (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	0.001
Selenium	0.001	mg/L	< 0.001	0.002	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.15	0.45	0.013	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	4.8	5.8	5.1	2.5
Magnesium	0.5	mg/L	4.8	4.2	8.4	5.0
Potassium	0.5	mg/L	1.1	< 0.5	1.7	1.0
Sodium	0.5	mg/L	23	21	24	30

Client Sample ID			MW22 Water	MW23 Water	QC341 Water	QC342 Water
Sample Matrix			P17-Ma19261	P17-Ma19262	P17-Ma19263	P17-Ma19264
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017	Mar 17, 2017	Mar 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	78	28	32	-
Ammonia (as N)	0.01	mg/L	0.13	< 0.01	0.03	-
Chloride	1	mg/L	65	53	56	-
Conductivity (at 25°C)	1	uS/cm	480	380	700	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	4.8	17	-
Nitrate (as N)	0.02	mg/L	< 0.02	4.8	17	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.03	-
Organic Nitrogen (as N)	0.2	mg/L	0.3	0.2	1.7	-
pH	0.1	pH Units	3.6	6.4	7.2	-
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	0.19	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.10	-
Sulphate (as SO4)	5	mg/L	62	44	39	-
Total Dissolved Solids	10	mg/L	270	320	530	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.2	1.7	-
Total Nitrogen (as N)	0.2	mg/L	0.4	5.0	19	-

Client Sample ID			MW22 Water	MW23 Water	QC341 Water	QC342 Water
Sample Matrix			P17-Ma19261	P17-Ma19262	P17-Ma19263	P17-Ma19264
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017	Mar 17, 2017	Mar 17, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	27	160	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	27	160	-
Heavy Metals						
Aluminium	0.05	mg/L	2.4	0.35	0.71	-
Aluminium (filtered)	0.05	mg/L	2.4	0.10	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	^{R05} 0.001	0.005	-
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	0.003	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Iron	0.05	mg/L	7.7	< 0.05	0.16	-
Iron (filtered)	0.05	mg/L	1.2	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	< 0.001	0.002	-
Nickel (filtered)	0.001	mg/L	0.007	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	0.014	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	10	33	78	-
Magnesium	0.5	mg/L	5.3	5.8	6.3	-
Potassium	0.5	mg/L	1.1	6.5	24	-
Sodium	0.5	mg/L	32	26	26	-

Client Sample ID			QC343 Water	MW1 Water
Sample Matrix			P17-Ma19265	P17-Ma19266
Eurofins mgt Sample No.			Mar 17, 2017	Mar 17, 2017
Date Sampled				
Test/Reference	LOR	Unit		
Acidity (as CaCO₃)				
Acidity (as CaCO ₃)	10	mg/L	-	31
Ammonia (as N)	0.01	mg/L	-	0.06
Chloride	1	mg/L	-	54
Conductivity (at 25°C)	1	uS/cm	-	690
Nitrate & Nitrite (as N)	0.05	mg/L	-	19
Nitrate (as N)	0.02	mg/L	-	19
Nitrite (as N)	0.02	mg/L	-	0.03

Client Sample ID			QC343	MW1
Sample Matrix			Water	Water
Eurofins mgt Sample No.			P17-Ma19265	P17-Ma19266
Date Sampled			Mar 17, 2017	Mar 17, 2017
Test/Reference	LOR	Unit		
Organic Nitrogen (as N)	0.2	mg/L	-	1.4
pH	0.1	pH Units	-	7.3
Phosphate total (as P)	0.05	mg/L	-	0.19
Phosphorus reactive (as P)	0.05	mg/L	-	0.10
Sulphate (as SO4)	5	mg/L	-	39
Total Dissolved Solids	10	mg/L	-	570
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	1.5
Total Nitrogen (as N)	0.2	mg/L	-	21
Alkalinity (speciated)				
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	160
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	< 10
Total Alkalinity (as CaCO3)	20	mg/L	-	160
Heavy Metals				
Aluminium	0.05	mg/L	-	0.69
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.003
Copper (filtered)	0.001	mg/L	< 0.001	0.002
Iron	0.05	mg/L	-	0.13
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05
Lead	0.001	mg/L	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.011
Zinc (filtered)	0.005	mg/L	< 0.005	0.006
Alkali Metals				
Calcium	0.5	mg/L	-	80
Magnesium	0.5	mg/L	-	6.4
Potassium	0.5	mg/L	-	24
Sodium	0.5	mg/L	-	26

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 21, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 21, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 21, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 21, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 21, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Mar 21, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 21, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 21, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 21, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 20, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 20, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 20, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 20, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Mar 21, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 21, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Mar 21, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Mar 21, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Mar 20, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Mar 21, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 17, 2017 4:21 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538465	Due: Mar 24, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X													X	X	X				X	X			X	X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X			X	X			X	
Brisbane Laboratory - NATA Site # 20794																																								
Perth Laboratory - NATA Site # 18217																																								
10	MW23	Mar 17, 2017		Water	P17-Ma19262	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
11	QC341	Mar 17, 2017		Water	P17-Ma19263	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12	QC342	Mar 17, 2017		Water	P17-Ma19264			X		X				X			X					X															X			
13	QC343	Mar 17, 2017		Water	P17-Ma19265			X		X				X			X					X															X			
14	MW1	Mar 17, 2017		Water	P17-Ma19266	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						12	12	14	12	14	12	14	12	12	14	12	12	14	12	14	12	14	12	14	12	14	12	12	12	12	12	14	12	12	12	14	12	12	12	12

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	125			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	88			70-130	Pass		
Chloride	%	116			70-130	Pass		
Nitrate & Nitrite (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	94			70-130	Pass		
Nitrite (as N)	%	103			70-130	Pass		
Phosphate total (as P)	%	84			70-130	Pass		
Phosphorus reactive (as P)	%	118			70-130	Pass		
Sulphate (as SO4)	%	121			70-130	Pass		
Total Dissolved Solids	%	98			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	87			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	72			70-130	Pass		
Total Alkalinity (as CaCO3)	%	79			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	94			70-130	Pass		
Aluminium (filtered)	%	88			70-130	Pass		
Arsenic	%	99			70-130	Pass		
Arsenic (filtered)	%	104			70-130	Pass		
Cadmium	%	94			70-130	Pass		
Cadmium (filtered)	%	104			70-130	Pass		
Chromium	%	99			70-130	Pass		
Chromium (filtered)	%	107			70-130	Pass		
Copper	%	102			70-130	Pass		
Copper (filtered)	%	110			70-130	Pass		
Iron	%	106			70-130	Pass		
Iron (filtered)	%	102			70-130	Pass		
Lead	%	101			70-130	Pass		
Lead (filtered)	%	114			70-130	Pass		
Manganese	%	94			70-130	Pass		
Manganese (filtered)	%	101			70-130	Pass		
Mercury	%	95			70-130	Pass		
Mercury (filtered)	%	115			70-130	Pass		
Nickel	%	99			70-130	Pass		
Nickel (filtered)	%	107			70-130	Pass		
Selenium	%	87			70-130	Pass		
Selenium (filtered)	%	102			70-130	Pass		
Zinc	%	104			70-130	Pass		
Zinc (filtered)	%	107			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	102			70-130	Pass		
Magnesium	%	106			70-130	Pass		
Potassium	%	96			70-130	Pass		
Sodium	%	90			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	P17-Ma21431	NCP	%	97		70-130	Pass	
Sulphate (as SO4)	M17-Ma19640	NCP	%	88		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B17-Ma20991	NCP	%	48		70-130	Fail	Q08
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ma19684	NCP	%	120		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ma21670	NCP	%	106		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ma19684	NCP	%	120		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Iron	S17-Ma21380	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	S17-Fe00392	NCP	%	78		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	P17-Ma19254	CP	%	119		70-130	Pass	
Aluminium (filtered)	P17-Ma19254	CP	%	100		70-130	Pass	
Arsenic	P17-Ma19254	CP	%	97		70-130	Pass	
Arsenic (filtered)	P17-Ma19254	CP	%	113		70-130	Pass	
Cadmium	P17-Ma19254	CP	%	92		70-130	Pass	
Cadmium (filtered)	P17-Ma19254	CP	%	113		70-130	Pass	
Chromium	P17-Ma19254	CP	%	96		70-130	Pass	
Chromium (filtered)	P17-Ma19254	CP	%	117		70-130	Pass	
Copper	P17-Ma19254	CP	%	96		70-130	Pass	
Copper (filtered)	P17-Ma19254	CP	%	119		70-130	Pass	
Iron (filtered)	P17-Ma19254	CP	%	83		70-130	Pass	
Lead	P17-Ma19254	CP	%	100		70-130	Pass	
Lead (filtered)	P17-Ma19254	CP	%	122		70-130	Pass	
Manganese	P17-Ma19254	CP	%	92		70-130	Pass	
Manganese (filtered)	P17-Ma19254	CP	%	112		70-130	Pass	
Mercury	P17-Ma19254	CP	%	105		70-130	Pass	
Mercury (filtered)	P17-Ma19254	CP	%	97		70-130	Pass	
Nickel	P17-Ma19254	CP	%	96		70-130	Pass	
Nickel (filtered)	P17-Ma19254	CP	%	116		70-130	Pass	
Selenium	P17-Ma19254	CP	%	87		70-130	Pass	
Selenium (filtered)	P17-Ma19254	CP	%	103		70-130	Pass	
Zinc	P17-Ma19254	CP	%	89		70-130	Pass	
Zinc (filtered)	P17-Ma19254	CP	%	115		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Magnesium	P17-Ma19254	CP	%	101		70-130	Pass	
Potassium	P17-Ma19254	CP	%	90		70-130	Pass	
Sodium	P17-Ma19254	CP	%	80		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ma19255	CP	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ma19255	CP	%	91		70-130	Pass	
Nitrate (as N)	P17-Ma19255	CP	%	91		70-130	Pass	
Nitrite (as N)	P17-Ma19255	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ma19256	CP	%	90		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ma19256	CP	%	97		70-130	Pass	
Nitrate (as N)	P17-Ma19256	CP	%	96		70-130	Pass	
Nitrite (as N)	P17-Ma19256	CP	%	101		70-130	Pass	
Phosphorus reactive (as P)	P17-Ma19256	CP	%	94		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	P17-Ma19261	CP	%	92		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (as N)	B17-Ma20990	NCP	mg/L	0.4	0.5	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Heavy Metals									
Aluminium	P17-Ma19253	CP	mg/L	0.51	0.48	6.0	30%	Pass	
Aluminium (filtered)	P17-Ma19253	CP	mg/L	0.36	0.37	2.0	30%	Pass	
Arsenic	P17-Ma19253	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Arsenic (filtered)	P17-Ma19253	CP	mg/L	0.001	0.001	16	30%	Pass	
Cadmium	P17-Ma19253	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	P17-Ma19253	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	P17-Ma19253	CP	mg/L	0.001	0.001	6.0	30%	Pass	
Chromium (filtered)	P17-Ma19253	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P17-Ma19253	CP	mg/L	1.9	1.8	7.0	30%	Pass	
Iron (filtered)	P17-Ma19253	CP	mg/L	1.5	1.5	5.0	30%	Pass	
Lead	P17-Ma19253	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	P17-Ma19253	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	P17-Ma19253	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	P17-Ma19253	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	P17-Ma19253	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	P17-Ma19253	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkali Metals									
Calcium	P17-Ma19253	CP	mg/L	6.2	5.9	4.0	30%	Pass	
Magnesium	P17-Ma19253	CP	mg/L	1.5	1.5	<1	30%	Pass	
Potassium	P17-Ma19253	CP	mg/L	0.6	0.6	11	30%	Pass	
Sodium	P17-Ma19253	CP	mg/L	8.6	8.3	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	P17-Ma19254	CP	uS/cm	310	320	<1	30%	Pass	
pH	P17-Ma19254	CP	pH Units	6.8	6.9	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Alkalinity (speciated)									
Bicarbonate Alkalinity (as CaCO3)	P17-Ma19254	CP	mg/L	110	110	3.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P17-Ma19254	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P17-Ma19254	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P17-Ma19254	CP	mg/L	110	110	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	P17-Ma19255	CP	mg/L	0.04	0.04	10	30%	Pass	
Nitrate & Nitrite (as N)	P17-Ma19255	CP	mg/L	0.20	0.19	4.0	30%	Pass	
Nitrate (as N)	P17-Ma19255	CP	mg/L	0.18	0.18	2.0	30%	Pass	
Nitrite (as N)	P17-Ma19255	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphorus reactive (as P)	P17-Ma19255	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	P17-Ma19256	CP	mg/L	0.02	0.02	7.0	30%	Pass	
Nitrate & Nitrite (as N)	P17-Ma19256	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	P17-Ma19256	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Nitrite (as N)	P17-Ma19256	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids	P17-Ma19257	CP	mg/L	220	230	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	P17-Ma19263	CP	mg/L	0.71	1.3	57	30%	Fail	Q15
Aluminium (filtered)	P17-Ma19263	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	P17-Ma19263	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	P17-Ma19263	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	P17-Ma19263	CP	mg/L	0.005	0.002	77	30%	Fail	Q15
Chromium (filtered)	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	P17-Ma19263	CP	mg/L	0.003	0.003	2.0	30%	Pass	
Copper (filtered)	P17-Ma19263	CP	mg/L	0.002	0.002	3.0	30%	Pass	
Iron	P17-Ma19263	CP	mg/L	0.16	0.23	35	30%	Fail	Q15
Iron (filtered)	P17-Ma19263	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	P17-Ma19263	CP	mg/L	< 0.001	0.001	73	30%	Fail	Q15
Manganese	P17-Ma19263	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	P17-Ma19263	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	P17-Ma19263	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	P17-Ma19263	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P17-Ma19263	CP	mg/L	0.002	< 0.001	110	30%	Fail	Q15
Nickel (filtered)	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	P17-Ma19263	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	P17-Ma19263	CP	mg/L	0.014	0.012	10	30%	Pass	
Zinc (filtered)	P17-Ma19263	CP	mg/L	0.006	0.006	1.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	P17-Ma19263	CP	mg/L	78	79	1.0	30%	Pass	
Magnesium	P17-Ma19263	CP	mg/L	6.3	6.4	1.0	30%	Pass	
Potassium	P17-Ma19263	CP	mg/L	24	24	1.0	30%	Pass	
Sodium	P17-Ma19263	CP	mg/L	26	26	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	P17-Ma19266	CP	mg/L	54	53	1.2	30%	Pass	
Conductivity (at 25°C)	P17-Ma19266	CP	uS/cm	690	710	3.0	30%	Pass	
Sulphate (as SO4)	P17-Ma19266	CP	mg/L	39	39	2.3	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	P17-Ma19266	CP	mg/L	160	160	1.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P17-Ma19266	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P17-Ma19266	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P17-Ma19266	CP	mg/L	160	160	1.0	30%	Pass	

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Mar 20, 2017 3:44 PM**
Eurofins | mgt reference: **538684**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 20, 2017 3:44 PM	
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538684	Due: Mar 27, 2017	
	Phone: 08 9355 7100	Priority: 5 Day	
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury	
Project Name: NL_BASELINE GW_SW			
Project ID: ENAUPERT04483AA			

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Ion	Ion (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	Eurofins mgt Suite B1					
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X														X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X																	X	X
Brisbane Laboratory - NATA Site # 20794																																																	
Perth Laboratory - NATA Site # 18217																																																	
10	SWL2_3	Mar 20, 2017		Water	P17-Ma21435	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	SWL3_1	Mar 20, 2017		Water	P17-Ma21436	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	SWL3_2	Mar 20, 2017		Water	P17-Ma21437	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	SWL3_3	Mar 20, 2017		Water	P17-Ma21438	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	QC344	Mar 20, 2017		Water	P17-Ma21439			X		X					X						X		X		X		X																						
15	QC345	Mar 20, 2017		Water	P17-Ma21440			X		X					X						X		X		X		X																						
Test Counts						13	13	15	13	15	13	15	13	13	15	13	13	15	9	13	15	13	15	13	15	13	15	13	15	13	13	13	13	15	13	9	13	9	13	15	13	13	13	13	1				

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **538684-W**
Project name NL_BASELINE GW_SW
Project ID ENAUPERT04483AA
Received Date Mar 20, 2017

Client Sample ID			MW2 Water	MW3 Water	MW4 Water	MW55 Water
Sample Matrix			P17-Ma21426	P17-Ma21427	P17-Ma21428	P17-Ma21429
Eurofins mgt Sample No.			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	-	-	< 0.02
TRH C10-C14	0.05	mg/L	-	-	-	0.07
TRH C15-C28	0.1	mg/L	-	-	-	0.2
TRH C29-C36	0.1	mg/L	-	-	-	< 0.1
TRH C10-36 (Total)	0.1	mg/L	-	-	-	0.27
BTEX						
Benzene	0.001	mg/L	-	-	-	< 0.001
Toluene	0.001	mg/L	-	-	-	< 0.001
Ethylbenzene	0.001	mg/L	-	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	-	-	< 0.002
o-Xylene	0.001	mg/L	-	-	-	< 0.001
Xylenes - Total	0.003	mg/L	-	-	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	-	-	83
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	-	-	-	< 0.01
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	-	-	< 0.05
TRH C6-C10	0.02	mg/L	-	-	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	-	-	-	< 0.02
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	-	-	-	< 0.05
TRH >C16-C34	0.1	mg/L	-	-	-	0.2
TRH >C34-C40	0.1	mg/L	-	-	-	< 0.1
Acidity & Ammonia						
Acidity (as CaCO3)	10	mg/L	38	73	43	83
Ammonia (as N)	0.01	mg/L	0.08	0.25	0.06	0.04
Chloride						
Chloride	1	mg/L	79	21	23	100
Conductivity						
Conductivity (at 25°C)	1	uS/cm	530	280	170	1100
Nitrate & Nitrite						
Nitrate & Nitrite (as N)	0.05	mg/L	0.55	0.31	0.19	3.5
Nitrate (as N)	0.02	mg/L	0.49	0.29	0.19	3.5
Nitrite (as N)	0.02	mg/L	0.06	< 0.02	< 0.02	< 0.02
Organic Nitrogen						
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.5	0.2	1.3
pH						
pH	0.1	pH Units	6.9	6.7	6.4	6.8
Phosphate						
Phosphate total (as P)	0.05	mg/L	0.17	0.08	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate						
Sulphate (as SO4)	5	mg/L	34	16	< 5	230

Client Sample ID			MW2 Water	MW3 Water	MW4 Water	MW55 Water
Sample Matrix			P17-Ma21426	P17-Ma21427	P17-Ma21428	P17-Ma21429
Eurofins mgt Sample No.			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Dissolved Solids	10	mg/L	370	210	120	740
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.8	0.3	1.3
Total Nitrogen (as N)	0.2	mg/L	1.1	1.1	0.5	4.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	100	95	46	150
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	100	95	46	150
Heavy Metals						
Aluminium	0.05	mg/L	0.33	^{R05} 0.28	0.06	0.22
Aluminium (filtered)	0.05	mg/L	0.10	^{R05} 0.29	< 0.05	0.17
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Iron	0.05	mg/L	0.35	< 0.05	0.09	0.10
Iron (filtered)	0.05	mg/L	0.17	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.019	< 0.005	< 0.005	0.026
Manganese (filtered)	0.005	mg/L	0.016	< 0.005	< 0.005	0.014
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	^{R05} 0.002	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	^{R05} 0.003	0.002
Zinc	0.005	mg/L	0.11	< 0.005	< 0.005	0.020
Zinc (filtered)	0.005	mg/L	0.080	< 0.005	< 0.005	0.011
Alkali Metals						
Calcium	0.5	mg/L	49	29	20	110
Magnesium	0.5	mg/L	8.4	3.9	1.0	19
Potassium	0.5	mg/L	1.2	1.9	< 0.5	26
Sodium	0.5	mg/L	42	10	9.4	110

Client Sample ID			SWL1_1	SWL1_2	SWL1_3	SWL2_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21430	P17-Ma21431	P17-Ma21432	P17-Ma21433
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	17	17	13	< 10
Ammonia (as N)	0.01	mg/L	0.12	< 0.01	< 0.01	0.02
Chloride	1	mg/L	79	84	62	70
Conductivity (at 25°C)	1	uS/cm	470	460	390	440
Nitrate & Nitrite (as N)	0.05	mg/L	0.40	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.40	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.3	0.4
pH	0.1	pH Units	6.9	6.9	7.0	7.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	46	45	27	43
Total Dissolved Solids	10	mg/L	280	260	220	260
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.3	0.4
Total Nitrogen (as N)	0.2	mg/L	0.9	0.4	0.3	0.4
Turbidity	1	NTU	3.7	3.7	1.6	2.6
E.coli	1	MPN/100mL	770	M ¹⁵ <10	M ¹⁵ <10	41
Thermotolerant Coliforms	1	MPN/100mL	10000	410	51	280
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	47	49	45	52
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	47	49	45	52
Heavy Metals						
Aluminium	0.05	mg/L	0.10	< 0.05	< 0.05	0.14
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.16	0.07	0.08	0.12
Iron (filtered)	0.05	mg/L	0.07	< 0.05	< 0.05	0.07
Lead	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	^{R05} 0.009	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	^{R05} 0.010	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.017	0.008	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.014	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL1_1	SWL1_2	SWL1_3	SWL2_1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21430	P17-Ma21431	P17-Ma21432	P17-Ma21433
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	17	17	15	14
Magnesium	0.5	mg/L	9.6	9.7	6.7	10
Potassium	0.5	mg/L	6.0	5.5	4.5	3.4
Sodium	0.5	mg/L	54	54	43	52

Client Sample ID			SWL2_2	SWL2_3	SWL3_1	SWL3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21434	P17-Ma21435	P17-Ma21436	P17-Ma21437
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.02	0.02	0.02	0.02
Chloride	1	mg/L	75	87	72	71
Conductivity (at 25°C)	1	uS/cm	440	430	440	450
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.4	0.4
pH	0.1	pH Units	7.5	7.5	7.7	7.7
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	43	42	24	24
Total Dissolved Solids	10	mg/L	250	240	250	270
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.4	0.4
Turbidity	1	NTU	1.7	1.6	2.5	2.7
E.coli	1	MPN/100mL	52	52	10	M ¹⁵ <10
Thermotolerant Coliforms	1	MPN/100mL	670	200	31	98
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	52	52	79	77
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	52	52	79	77
Heavy Metals						
Aluminium	0.05	mg/L	R05 0.11	0.14	0.27	0.27
Aluminium (filtered)	0.05	mg/L	R05 0.12	0.12	0.24	0.24
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.027	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.10	0.11	0.20	0.20
Iron (filtered)	0.05	mg/L	0.07	0.07	0.14	0.14
Lead	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL2_2	SWL2_3	SWL3_1	SWL3_2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21434	P17-Ma21435	P17-Ma21436	P17-Ma21437
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.028	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.009	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	12	15	22	22
Magnesium	0.5	mg/L	8.5	11	9.0	9.1
Potassium	0.5	mg/L	2.8	3.7	2.6	2.6
Sodium	0.5	mg/L	42	54	56	55

Client Sample ID			SWL3_3	QC344	QC345
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21438	P17-Ma21439	P17-Ma21440
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	< 10	-	-
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	0.02	-	-
Chloride					
Chloride	1	mg/L	72	-	-
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	440	-	-
Nitrate & Nitrite (as N)					
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	-	-
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	< 0.02	-	-
Nitrite (as N)					
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)					
Organic Nitrogen (as N)	0.2	mg/L	0.5	-	-
pH					
pH	0.1	pH Units	7.6	-	-
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as SO4)					
Sulphate (as SO4)	5	mg/L	24	-	-
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	260	-	-
Total Kjeldahl Nitrogen (as N)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	-	-
Total Nitrogen (as N)					
Total Nitrogen (as N)	0.2	mg/L	0.5	-	-
Turbidity					
Turbidity	1	NTU	2.7	-	-
E.coli					
E.coli	1	MPN/100mL	10	-	-
Thermotolerant Coliforms					
Thermotolerant Coliforms	1	MPN/100mL	10	-	-
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)					
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	80	-	-
Carbonate Alkalinity (as CaCO3)					
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO3)					
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO3)					
Total Alkalinity (as CaCO3)	20	mg/L	80	-	-

Client Sample ID			SWL3_3	QC344	QC345
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			P17-Ma21438	P17-Ma21439	P17-Ma21440
Date Sampled			Mar 20, 2017	Mar 20, 2017	Mar 20, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Aluminium	0.05	mg/L	0.26	-	-
Aluminium (filtered)	0.05	mg/L	0.24	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.20	-	-
Iron (filtered)	0.05	mg/L	0.14	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	22	-	-
Magnesium	0.5	mg/L	9.0	-	-
Potassium	0.5	mg/L	2.6	-	-
Sodium	0.5	mg/L	55	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Mar 24, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 21, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Mar 21, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Mar 24, 2017	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Mar 21, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Mar 21, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Mar 21, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Mar 21, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Mar 21, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Mar 21, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Mar 21, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Mar 21, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Mar 21, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Mar 21, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Mar 21, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Mar 21, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 22, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Mar 22, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Mar 22, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Mar 22, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Mar 21, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Mar 21, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Mar 21, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Mar 21, 2017	2 Day

Description

Organic Nitrogen (as N)

- Method: APHA 4500 Organic Nitrogen (N)

Total Kjeldahl Nitrogen (as N)

- Method: APHA 4500 TKN

Testing Site

Melbourne

Melbourne

Extracted

Mar 20, 2017

Mar 21, 2017

Holding Time

7 Day

7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Mar 20, 2017 3:44 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 538684	Due: Mar 27, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Ion	Ion (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	Eurofins mgt Suite B1				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X			X											X	X	X															X	X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X													X	X		X	
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
External Laboratory																																																
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																											
1	MW2	Mar 20, 2017		Water	P17-Ma21426	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
2	MW3	Mar 20, 2017		Water	P17-Ma21427	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3	MW4	Mar 20, 2017		Water	P17-Ma21428	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MW55	Mar 20, 2017		Water	P17-Ma21429	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	SWL1_1	Mar 20, 2017		Water	P17-Ma21430	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	SWL1_2	Mar 20, 2017		Water	P17-Ma21431	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	SWL1_3	Mar 20, 2017		Water	P17-Ma21432	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	SWL2_1	Mar 20, 2017		Water	P17-Ma21433	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	SWL2_2	Mar 20, 2017		Water	P17-Ma21434	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	70			70-130	Pass	
TRH C10-C14	%	92			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	85			70-130	Pass	
Toluene	%	84			70-130	Pass	
Ethylbenzene	%	83			70-130	Pass	
m&p-Xylenes	%	86			70-130	Pass	
o-Xylene	%	86			70-130	Pass	
Xylenes - Total	%	86			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	90			70-130	Pass	
TRH C6-C10	%	71			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	118			70-130	Pass	
Ammonia (as N)	%	87			70-130	Pass	
Chloride	%	111			70-130	Pass	
Nitrate & Nitrite (as N)	%	87			70-130	Pass	
Nitrate (as N)	%	87			70-130	Pass	
Nitrite (as N)	%	100			70-130	Pass	
Phosphate total (as P)	%	91			70-130	Pass	
Phosphorus reactive (as P)	%	115			70-130	Pass	
Sulphate (as SO ₄)	%	121			70-130	Pass	
Total Dissolved Solids	%	102			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO ₃)	%	87			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Total Alkalinity (as CaCO ₃)	%	90			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	88			70-130	Pass		
Aluminium (filtered)	%	88			70-130	Pass		
Arsenic	%	110			70-130	Pass		
Arsenic (filtered)	%	104			70-130	Pass		
Cadmium	%	101			70-130	Pass		
Cadmium (filtered)	%	104			70-130	Pass		
Chromium (filtered)	%	107			70-130	Pass		
Copper	%	92			70-130	Pass		
Copper (filtered)	%	110			70-130	Pass		
Iron	%	84			70-130	Pass		
Iron (filtered)	%	102			70-130	Pass		
Lead	%	93			70-130	Pass		
Lead (filtered)	%	114			70-130	Pass		
Manganese (filtered)	%	101			70-130	Pass		
Mercury	%	89			70-130	Pass		
Mercury (filtered)	%	115			70-130	Pass		
Nickel (filtered)	%	107			70-130	Pass		
Selenium	%	104			70-130	Pass		
Selenium (filtered)	%	102			70-130	Pass		
Zinc	%	91			70-130	Pass		
Zinc (filtered)	%	107			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	106			70-130	Pass		
Magnesium	%	101			70-130	Pass		
Potassium	%	102			70-130	Pass		
Sodium	%	96			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	B17-Ma18846	NCP	%	89		70-130	Pass	
Nitrate & Nitrite (as N)	B17-Ma18846	NCP	%	88		70-130	Pass	
Nitrate (as N)	B17-Ma18846	NCP	%	88		70-130	Pass	
Nitrite (as N)	B17-Ma18846	NCP	%	100		70-130	Pass	
Phosphorus reactive (as P)	P17-Ma21426	CP	%	92		70-130	Pass	
Sulphate (as SO ₄)	M17-Ma19640	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ma19684	NCP	%	120		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ma21670	NCP	%	106		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ma19684	NCP	%	120		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Copper	S17-Ma29466	NCP	%	97		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	P17-Ma21427	CP	%	91		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	P17-Ma21427	CP	%	42		70-130	Fail	Q08
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	P17-Ma21427	CP	%	109		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Aluminium (filtered)	P17-Ma21427	CP	%	101		70-130	Pass	
Arsenic	P17-Ma21427	CP	%	109		70-130	Pass	
Arsenic (filtered)	P17-Ma21427	CP	%	112		70-130	Pass	
Cadmium	P17-Ma21427	CP	%	110		70-130	Pass	
Cadmium (filtered)	P17-Ma21427	CP	%	114		70-130	Pass	
Chromium	P17-Ma21427	CP	%	125		70-130	Pass	
Chromium (filtered)	P17-Ma21427	CP	%	115		70-130	Pass	
Copper (filtered)	P17-Ma21427	CP	%	117		70-130	Pass	
Iron	P17-Ma21427	CP	%	114		70-130	Pass	
Iron (filtered)	P17-Ma21427	CP	%	95		70-130	Pass	
Lead	P17-Ma21427	CP	%	118		70-130	Pass	
Lead (filtered)	P17-Ma21427	CP	%	122		70-130	Pass	
Manganese	P17-Ma21427	CP	%	107		70-130	Pass	
Manganese (filtered)	P17-Ma21427	CP	%	109		70-130	Pass	
Mercury	P17-Ma21427	CP	%	128		70-130	Pass	
Mercury (filtered)	P17-Ma21427	CP	%	97		70-130	Pass	
Nickel	P17-Ma21427	CP	%	118		70-130	Pass	
Nickel (filtered)	P17-Ma21427	CP	%	115		70-130	Pass	
Selenium	P17-Ma21427	CP	%	114		70-130	Pass	
Selenium (filtered)	P17-Ma21427	CP	%	104		70-130	Pass	
Zinc	P17-Ma21427	CP	%	118		70-130	Pass	
Zinc (filtered)	P17-Ma21427	CP	%	116		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	P17-Ma21427	CP	%	184		70-130	Fail	Q08
Magnesium	P17-Ma21427	CP	%	119		70-130	Pass	
Potassium	P17-Ma21427	CP	%	109		70-130	Pass	
Sodium	P17-Ma21427	CP	%	119		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M17-Ma20167	NCP	%	103		70-130	Pass	
TRH C10-C14	P17-Ma21411	NCP	%	110		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M17-Ma20167	NCP	%	115		70-130	Pass	
Toluene	M17-Ma20167	NCP	%	112		70-130	Pass	
Ethylbenzene	M17-Ma20167	NCP	%	113		70-130	Pass	
m&p-Xylenes	M17-Ma20167	NCP	%	115		70-130	Pass	
o-Xylene	M17-Ma20167	NCP	%	115		70-130	Pass	
Xylenes - Total	M17-Ma20167	NCP	%	115		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M17-Ma20167	NCP	%	109		70-130	Pass	
TRH C6-C10	M17-Ma20167	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	P17-Ma21411	NCP	%	106		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	P17-Ma21430	CP	%	114		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chloride	P17-Ma21431	CP	%	97		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chloride	P17-Ma21435	CP	%	96			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	P17-Ma21426	CP	mg/L	0.17	0.16	4.0	30%	Pass	
Phosphorus reactive (as P)	P17-Ma21426	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Dissolved Solids	P17-Ma23335	NCP	mg/L	400	430	8.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	P17-Ma21426	CP	mg/L	0.5	0.5	1.3	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	P17-Ma21426	CP	mg/L	0.10	0.10	1.0	30%	Pass	
Mercury	S17-Ma29465	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Selenium	S17-Ma27584	NCP	mg/L	0.003	0.003	8.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	P17-Ma21426	CP	mg/L	49	50	3.0	30%	Pass	
Magnesium	P17-Ma21426	CP	mg/L	8.4	8.7	3.0	30%	Pass	
Potassium	P17-Ma21426	CP	mg/L	1.2	1.0	22	30%	Pass	
Sodium	P17-Ma21426	CP	mg/L	42	40	3.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury (filtered)	P17-Ma19263	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Selenium (filtered)	P17-Ma19263	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-Ma19594	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	P17-Ma21410	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	P17-Ma21410	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	P17-Ma21410	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M17-Ma19594	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M17-Ma19594	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M17-Ma19594	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M17-Ma19594	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M17-Ma19594	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M17-Ma19594	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M17-Ma19594	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M17-Ma19594	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	P17-Ma21410	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	P17-Ma21410	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	P17-Ma21410	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	P17-Ma21429	CP	mg/L	0.04	0.04	9.0	30%	Pass	
Nitrate & Nitrite (as N)	P17-Ma21429	CP	mg/L	3.5	3.5	<1	30%	Pass	
Nitrate (as N)	P17-Ma21429	CP	mg/L	3.5	3.5	<1	30%	Pass	
Nitrite (as N)	P17-Ma21429	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Turbidity	P17-Ma21432	CP	NTU	1.6	2.1	24	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chloride	P17-Ma21434	CP	mg/L	75	77	3.6	30%	Pass
Sulphate (as SO ₄)	P17-Ma21434	CP	mg/L	43	43	<1	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ma21434	CP	mg/L	12	14	22	30%	Pass
Magnesium	P17-Ma21434	CP	mg/L	8.5	10	20	30%	Pass
Potassium	P17-Ma21434	CP	mg/L	2.8	3.6	24	30%	Pass
Sodium	P17-Ma21434	CP	mg/L	42	52	22	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ma21435	CP	uS/cm	430	440	2.0	30%	Pass
pH	P17-Ma21435	CP	pH Units	7.5	7.5	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ma21435	CP	mg/L	52	52	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ma21435	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ma21435	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ma21435	CP	mg/L	52	52	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P17-Ma21436	CP	mg/L	0.24	0.25	4.0	30%	Pass
Arsenic (filtered)	P17-Ma21436	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P17-Ma21436	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P17-Ma21436	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	P17-Ma21436	CP	mg/L	0.14	0.14	6.0	30%	Pass
Lead (filtered)	P17-Ma21436	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P17-Ma21436	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel (filtered)	P17-Ma21436	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P17-Ma21436	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1702376**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : EN/007/14
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Ockwell
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7606
Date Samples Received : 14-Mar-2017 16:45
Date Analysis Commenced : 14-Mar-2017
Issue Date : 22-Mar-2017 15:42



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- EK055G: Poor spike recovery due to possible sample matrix interference.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC328	----	----	----	----
Client sampling date / time		[14-Mar-2017]			----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702376-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.36	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2820	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1830	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	184	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	117	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	117	----	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	24	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	22	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	952	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	38	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	67	----	----	----	----	
Sodium	7440-23-5	1	mg/L	427	----	----	----	----	
Potassium	7440-09-7	1	mg/L	31	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	82	----	----	----	----	
Iron	7439-89-6	2	µg/L	5750	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.4	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	3.7	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC328	----	----	----	----
Client sampling date / time				[14-Mar-2017]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702376-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Chromium	7440-47-3	0.2	µg/L	0.8	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.8	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	313	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	2.1	----	----	----	----	
Zinc	7440-66-6	1	µg/L	2	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	2020	----	----	----	----	
Iron	7439-89-6	2	µg/L	14400	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.6	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	5.5	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	0.36	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	3.5	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	6.0	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	3.8	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	400	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	5.5	----	----	----	----	
Zinc	7440-66-6	1	µg/L	39	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	3.19	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	11.0	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	11.0	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	1.91	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.66	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC328	----	----	----	----
Client sampling date / time				[14-Mar-2017]	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702376-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	29.6	----	----	----	----	
Total Cations	----	0.01	meq/L	26.8	----	----	----	----	
Ionic Balance	----	0.01	%	5.09	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	29000	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	29000	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1702376	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Ockwell
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Mar-2017
Order number	: ----	Date Analysis Commenced	: 14-Mar-2017
C-O-C number	: ----	Issue Date	: 22-Mar-2017
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alini Goundar	Senior Analyst	Perth Microbiology, Malaga, WA
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 793535)									
EP1702373-012	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.52	7.58	0.795	0% - 20%
EP1702373-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.40	7.39	0.135	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 793534)									
EP1702373-012	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	6040	6040	0.00	0% - 20%
EP1702373-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	6290	6310	0.297	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 796784)									
EP1702374-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6620	6640	0.241	0% - 20%
EP1702378-006	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1670	1760	5.31	0% - 20%
EA045: Turbidity (QC Lot: 791871)									
EP1702366-007	Anonymous	EA045: Turbidity	----	0.1	NTU	8.2	8.2	0.00	0% - 20%
EP1702372-009	Anonymous	EA045: Turbidity	----	0.1	NTU	0.2	0.2	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 793536)									
EP1702373-012	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	312	352	12.1	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	312	352	12.1	0% - 20%
EP1702373-006	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	119	137	13.9	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	119	137	13.9	0% - 20%
ED038A: Acidity (QC Lot: 792732)									
EP1702241-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	8	8	0.00	No Limit
EP1702305-003	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	20	21	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 791854)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 791854) - continued									
EP1702364-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	99	92	7.97	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 791855)									
EP1702364-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	223	226	1.16	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 794548)									
EP1702372-010	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	36	35	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	50	50	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	101	100	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	12	12	0.00	0% - 50%
EP1702413-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	16	16	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	126	126	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 798253)									
EP1702183-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 795007)									
EP1702351-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
WN1700936-004	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 796625)									
EP1702376-001	QC328	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.8	0.8	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	3.7	3.8	2.75	0% - 50%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.8	0.9	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	313	310	0.865	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	2.1	2.3	6.77	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	2	2	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	82	82	0.00	0% - 50%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 796626)									
EP1702376-001	QC328	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.4	0.5	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	5750	5750	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 796628)									
EP1702376-001	QC328	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	0.36	0.34	6.64	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	3.8	3.8	0.00	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	5.5	5.4	0.00	0% - 20%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	3.5	3.5	0.00	0% - 50%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	6.0	6.4	6.41	0% - 50%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	400	402	0.327	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	5.5	5.2	5.10	0% - 50%
		EG094A-T: Zinc	7440-66-6	1	µg/L	39	39	0.00	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 796628) - continued									
EP1702376-001	QC328	EG094A-T: Aluminium	7429-90-5	5	µg/L	2020	2070	2.63	0% - 20%
ES1706089-002	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	0.5	0.5	0.00	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	10.6	9.9	6.80	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	3	3	0.00	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	16	16	0.00	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 796629)									
EP1702376-001	QC328	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.6	0.7	0.00	No Limit
ES1706089-002	Anonymous	EG094B-T: Iron	7439-89-6	2	µg/L	14400	14700	1.41	0% - 20%
		EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	1310	1300	0.324	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 791882)									
EP1702376-001	QC328	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	3.19	3.38	5.88	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 791853)									
EP1702376-001	QC328	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1702364-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 791881)									
EP1702386-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	3.59	3.59	0.00	0% - 20%
EP1702376-001	QC328	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 796991)									
EP1702376-001	QC328	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	11.0	10.8	2.49	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 796990)									
EP1702376-001	QC328	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.91	1.96	2.33	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 791857)									
EP1702364-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.04	29.6	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 793535)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 793534)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	96.8	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 796784)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	103	83	111	
				<10	1000 mg/L	106	70	130	
EA045: Turbidity (QCLot: 791871)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.5	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 793536)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	106	76	126	
				<1	200 mg/L	102	90	106	
ED038A: Acidity (QCLot: 792732)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	96.0	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 791854)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	97.4	89	113	
				<1	100 mg/L	91.0	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 791855)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	91.4	84	120	
				<1	1000 mg/L	100	84	110	
ED093F: Dissolved Major Cations (QCLot: 794548)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	97.1	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	94.2	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.8	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	96.7	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 798253)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	86.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 795007)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	99.0	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 796625)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	99.8	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	104	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	100	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	97.8	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	96.2	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	101	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	101	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	97.6	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	98.3	83	121	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 796626)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	98.3	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	97.8	70	122	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 796628)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	116	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	110	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	102	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	97.7	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	106	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	102	81	129	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 796629)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	104	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	103	77	121	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 791882)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.6	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 791853)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	95.2	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 791881)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.8	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 796991)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	86.3	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 796990)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	118	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 791857)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	97.7	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 791854)							
EP1702376-001	QC328	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	108	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 791855)							
EP1702376-001	QC328	ED045G: Chloride	16887-00-6	1000 mg/L	96.4	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 798253)							
EP1702183-002	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	92.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 795007)							
ES1705916-004	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	83.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 796625)							
EP1702427-001	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	109	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	120	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	118	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	114	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	116	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	116	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	120	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 796628)							
EP1702434-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	116	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	105	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	106	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	106	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	108	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	105	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	104	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 791882)							
EP1702376-001	QC328	EK055G: Ammonia as N	7664-41-7	1 mg/L	# 60.1	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 791853)							
EP1702376-001	QC328	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	99.7	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 791881)							
EP1702373-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	# Not Determined	70	130



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 796991)							
EP1702376-001	QC328	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	78.2	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 796990)							
EP1702376-001	QC328	EK067G: Total Phosphorus as P	----	1 mg/L	86.8	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 791857)							
EP1702376-001	QC328	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	117	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1702376	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_SW Monitoring	Date Samples Received	: 14-Mar-2017
Site	: ----	Issue Date	: 22-Mar-2017
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	EP1702376--001	QC328	Ammonia as N	7664-41-7	60.1 %	70-130%	Recovery less than lower data quality objective
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EP1702373--013	Anonymous	Nitrite + Nitrate as N	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle - Unpreserved QC328		----	----	----	15-Mar-2017	14-Mar-2017	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle - Unpreserved (EA005-P) QC328	14-Mar-2017		----	----	----	15-Mar-2017	14-Mar-2017	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle - Unpreserved (EA010-P) QC328	14-Mar-2017		----	----	----	15-Mar-2017	11-Apr-2017	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Miscellaneous Plastic bottle - Unpreserved (EA015H) QC328	14-Mar-2017		----	----	----	17-Mar-2017	21-Mar-2017	✓
EA045: Turbidity								
Miscellaneous Plastic bottle - Unpreserved (EA045) QC328	14-Mar-2017		----	----	----	14-Mar-2017	16-Mar-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle - Unpreserved (ED037-P) QC328	14-Mar-2017	----	----	----	15-Mar-2017	28-Mar-2017	✓
ED038A: Acidity							
Miscellaneous Plastic bottle - Unpreserved (ED038) QC328	14-Mar-2017	----	----	----	15-Mar-2017	28-Mar-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle - Unpreserved (ED041G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	11-Apr-2017	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (ED045G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	11-Apr-2017	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle - Unpreserved (ED093F) QC328	14-Mar-2017	----	----	----	20-Mar-2017	21-Mar-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F-LL) QC328	14-Mar-2017	----	----	----	18-Mar-2017	11-Apr-2017	✓
EG035T: Total Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T-LL) QC328	14-Mar-2017	----	----	----	17-Mar-2017	11-Apr-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG094B-F) QC328	14-Mar-2017	----	----	----	17-Mar-2017	10-Sep-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG094B-T) QC328	14-Mar-2017	17-Mar-2017	10-Sep-2017	✓	17-Mar-2017	10-Sep-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	11-Apr-2017	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (EK057G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	16-Mar-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	11-Apr-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC328	14-Mar-2017	21-Mar-2017	11-Apr-2017	✓	21-Mar-2017	11-Apr-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC328	14-Mar-2017	21-Mar-2017	11-Apr-2017	✓	21-Mar-2017	11-Apr-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle - Unpreserved (EK071G) QC328	14-Mar-2017	----	----	----	14-Mar-2017	16-Mar-2017	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC328	14-Mar-2017	----	----	----	14-Mar-2017	15-Mar-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

CERTIFICATE OF ANALYSIS

Work Order : **EP1702447**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : HARRIET CARTER
Site : ----
Quote number : EN/007/14
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Ockwell
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7606
Date Samples Received : 15-Mar-2017 14:55
Date Analysis Commenced : 15-Mar-2017
Issue Date : 24-Mar-2017 10:30



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- EG035: Matrix spike failure analysis was not conducted for EM1702939#061 due to insufficient sample amount.
- MF = membrane filtration
- CFU = colony forming unit
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID			QC332	----	----	----	----
Client sampling date / time		15-Mar-2017 00:00			----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702447-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	6.89	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	439	----	----	----	----	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	276	----	----	----	----	
EA045: Turbidity									
Turbidity	----	0.1	NTU	377	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	30	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	30	----	----	----	----	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	27	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	----	----	----	----	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	80	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	17	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	6	----	----	----	----	
Sodium	7440-23-5	1	mg/L	43	----	----	----	----	
Potassium	7440-09-7	1	mg/L	13	----	----	----	----	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	115	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	0.8	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	0.6	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC332	----	----	----	----
Client sampling date / time				15-Mar-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702447-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	935	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	0.2	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	6.9	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	0.7	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.2	----	----	----	----	
Zinc	7440-66-6	1	µg/L	<1	----	----	----	----	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	1870	----	----	----	----	
Arsenic	7440-38-2	0.2	µg/L	2.0	----	----	----	----	
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----	
Chromium	7440-47-3	0.2	µg/L	3.0	----	----	----	----	
Copper	7440-50-8	0.5	µg/L	6.8	----	----	----	----	
Iron	7439-89-6	2	µg/L	3740	----	----	----	----	
Lead	7439-92-1	0.1	µg/L	5.2	----	----	----	----	
Manganese	7439-96-5	0.5	µg/L	14.5	----	----	----	----	
Selenium	7782-49-2	0.2	µg/L	0.3	----	----	----	----	
Nickel	7440-02-0	0.5	µg/L	1.3	----	----	----	----	
Zinc	7440-66-6	1	µg/L	40	----	----	----	----	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.02	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	16.7	----	----	----	----	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	16.7	----	----	----	----	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	2.47	----	----	----	----	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.14	----	----	----	----	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC332	----	----	----	----
Client sampling date / time				15-Mar-2017 00:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	EP1702447-001	-----	-----	-----	-----	
				Result	----	----	----	----	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	3.36	----	----	----	----	
Total Cations	----	0.01	meq/L	3.54	----	----	----	----	
Ionic Balance	----	0.01	%	2.74	----	----	----	----	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	1400	----	----	----	----	
<i>Escherichia coli</i>	----	1	CFU/100mL	1400	----	----	----	----	

QUALITY CONTROL REPORT

Work Order	: EP1702447	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Ockwell
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 15-Mar-2017
Order number	: ----	Date Analysis Commenced	: 15-Mar-2017
C-O-C number	: ----	Issue Date	: 24-Mar-2017
Sampler	: HARRIET CARTER		
Site	: ----		
Quote number	: EN/007/14		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 795570)									
EP1702448-006	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.65	7.68	0.391	0% - 20%
EP1702434-007	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.26	8.29	0.362	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 795572)									
EP1702448-006	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	49300	49400	0.206	0% - 20%
EP1702434-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	809	790	2.41	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 799191)									
EP1702433-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	56900	57400	0.735	0% - 20%
EP1702434-008	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	559	553	1.08	0% - 20%
EA045: Turbidity (QC Lot: 793806)									
EP1702438-001	Anonymous	EA045: Turbidity	----	0.1	NTU	2.6	2.6	0.00	0% - 20%
EP1702449-001	Anonymous	EA045: Turbidity	----	0.1	NTU	16.8	16.8	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 795569)									
EP1702425-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	181	182	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	181	182	0.00	0% - 20%
EP1702434-007	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	276	273	1.04	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	276	273	1.04	0% - 20%
ED038A: Acidity (QC Lot: 799342)									
EP1702393-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	168	166	1.16	0% - 20%
EP1702393-011	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	92	93	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 793890)									

Page : 3 of 8
 Work Order : EP1702447
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA_NL_Baseline GW_ SW Monitoring



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 793890) - continued									
EP1702447-001	QC332	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	27	11.1	0% - 20%
EP1702417-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 793889)									
EP1702447-001	QC332	ED045G: Chloride	16887-00-6	1	mg/L	80	79	1.37	0% - 20%
EP1702417-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	<1	<1	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 799204)									
EP1702432-010	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	46	46	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	42	42	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	74	74	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	7	7	0.00	No Limit
EP1702452-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	44	45	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	11	11	0.00	0% - 50%
		ED093F: Sodium	7440-23-5	1	mg/L	110	107	2.30	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	6	6	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 803212)									
EM1702939-061	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1702434-006	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 801868)									
EM1702939-057	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	0.00004	<0.00004	0.00	No Limit
EP1702434-004	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 798998)									
EP1702447-001	QC332	EG094B-F: Selenium	7782-49-2	0.2	µg/L	0.2	0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	935	933	0.224	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 798999)									
EP1702447-001	QC332	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.2	0.2	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.8	0.8	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.6	0.6	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	6.9	6.8	0.00	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.7	0.7	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<1	<1	0.00	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	115	114	0.00	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 799018)									
EP1702447-001	QC332	EG094B-T: Selenium	7782-49-2	0.2	µg/L	0.3	0.3	0.00	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	3740	3710	1.03	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 799019)									
EP1702447-001	QC332	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	5.2	5.0	2.58	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 799019) - continued									
EP1702447-001	QC332	EG094A-T: Arsenic	7440-38-2	0.2	µg/L	2.0	1.9	0.00	0% - 50%
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	3.0	2.9	0.00	0% - 50%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	6.8	6.6	2.72	0% - 50%
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	14.5	14.1	2.59	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	1.3	1.3	0.00	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	40	39	3.26	0% - 20%
		EG094A-T: Aluminium	7429-90-5	5	µg/L	1870	1840	1.39	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 793910)									
EP1702425-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.01	0.02	70.8	No Limit
EP1702447-001	QC332	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 793888)									
EP1702436-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.56	0.56	0.00	0% - 20%
EP1702417-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 793911)									
EP1702425-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.56	0.57	0.00	0% - 20%
EP1702447-001	QC332	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 799674)									
EP1702447-001	QC332	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	16.7	17.1	2.50	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 799673)									
EP1702447-001	QC332	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.47	2.50	1.57	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 793891)									
EP1702447-001	QC332	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.14	0.14	0.00	0% - 50%
EP1702417-009	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 795570)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 795572)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	99.7	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 799191)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.8	83	111	
				<10	1000 mg/L	111	70	130	
EA045: Turbidity (QCLot: 793806)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	97.5	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 795569)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	124	76	126	
				<1	200 mg/L	99.5	90	106	
ED038A: Acidity (QCLot: 799342)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	97.0	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 793890)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	104	89	113	
				<1	100 mg/L	102	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 793889)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.8	84	120	
				<1	1000 mg/L	97.8	84	110	
ED093F: Dissolved Major Cations (QCLot: 799204)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	104	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	100	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	99.7	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 803212)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	93.0	83	105	
EG035T: Total Mercury by FIMS (QCLot: 801868)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	101	85	105	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 798998)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	102	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	99.6	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 798999)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	101	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	90.4	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	104	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	101	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	101	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.0	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	103	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	105	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	100	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 799018)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	102	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	91.6	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 799019)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	102	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	100	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	90.7	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	98.0	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	90.7	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	103	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	91.8	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.6	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	109	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 793910)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	93.9	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 793888)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	93.8	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 793911)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	97.1	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 799674)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	83.8	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 799673)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.6	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 793891)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	90.2	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 793890)							
EP1702417-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 793889)							
EP1702417-008	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	# Not Determined	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 803212)							
EM1702939-061	Anonymous	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	# 29.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 801868)							
EP1702434-003	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	84.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 798999)							
EP1702486-001	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	101	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	98.1	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	104	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	96.4	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	95.8	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	106	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	97.7	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 799019)							
EP1702451-001	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	103	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	92.3	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	102	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	80.6	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	103	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	91.1	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	90.6	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	# Not Determined	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 793910)							
EP1702425-002	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.9	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 793888)							
EP1702417-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	76.1	70	130

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 Work Order : EP1702447
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 793911)							
EP1702425-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	103	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 799674)							
EP1702447-001	QC332	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	87.7	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 799673)							
EP1702447-001	QC332	EK067G: Total Phosphorus as P	----	1 mg/L	81.4	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 793891)							
EP1702417-008	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	105	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1702447	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 15-Mar-2017
Site	: ----	Issue Date	: 24-Mar-2017
Sampler	: HARRIET CARTER	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EP1702417--008	Anonymous	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
ED045G: Chloride by Discrete Analyser	EP1702417--008	Anonymous	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG035F: Dissolved Mercury by FIMS	EM1702939--061	Anonymous	Mercury	7439-97-6	29.0 %	70-130%	Recovery less than lower data quality objective
EG094T: Total metals in Fresh water by ORC-ICPMS	EP1702451--001	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Miscellaneous Plastic bottle - Unpreserved QC332		----	----	----	16-Mar-2017	15-Mar-2017	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Miscellaneous Plastic bottle - Unpreserved (EA005-P) QC332	15-Mar-2017		----	----	----	16-Mar-2017	15-Mar-2017	*
EA010P: Conductivity by PC Titrator								
Miscellaneous Plastic bottle - Unpreserved (EA010-P) QC332	15-Mar-2017		----	----	----	16-Mar-2017	12-Apr-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Miscellaneous Plastic bottle - Unpreserved (EA015H) QC332	15-Mar-2017	----	----	----	20-Mar-2017	22-Mar-2017	✓
EA045: Turbidity							
Miscellaneous Plastic bottle - Unpreserved (EA045) QC332	15-Mar-2017	----	----	----	15-Mar-2017	17-Mar-2017	✓
ED037P: Alkalinity by PC Titrator							
Miscellaneous Plastic bottle - Unpreserved (ED037-P) QC332	15-Mar-2017	----	----	----	16-Mar-2017	29-Mar-2017	✓
ED038A: Acidity							
Miscellaneous Plastic bottle - Unpreserved (ED038) QC332	15-Mar-2017	----	----	----	20-Mar-2017	29-Mar-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Miscellaneous Plastic bottle - Unpreserved (ED041G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	12-Apr-2017	✓
ED045G: Chloride by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (ED045G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	12-Apr-2017	✓
ED093F: Dissolved Major Cations							
Miscellaneous Plastic bottle - Unpreserved (ED093F) QC332	15-Mar-2017	----	----	----	20-Mar-2017	22-Mar-2017	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC332	15-Mar-2017	----	----	----	22-Mar-2017	12-Apr-2017	✓
EG035T: Total Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC332	15-Mar-2017	----	----	----	22-Mar-2017	12-Apr-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC332	15-Mar-2017	----	----	----	20-Mar-2017	11-Sep-2017	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC332	15-Mar-2017	20-Mar-2017	11-Sep-2017	✓	20-Mar-2017	11-Sep-2017	✓
EK055G: Ammonia as N by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK055G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	12-Apr-2017	✓
EK057G: Nitrite as N by Discrete Analyser							
Miscellaneous Plastic bottle - Unpreserved (EK057G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	17-Mar-2017	✓



Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK059G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	12-Apr-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Miscellaneous Sulphuric preserved (EK061G) QC332	15-Mar-2017	21-Mar-2017	12-Apr-2017	✓	22-Mar-2017	12-Apr-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Miscellaneous Sulphuric preserved (EK067G) QC332	15-Mar-2017	21-Mar-2017	12-Apr-2017	✓	22-Mar-2017	12-Apr-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Miscellaneous Plastic bottle - Unpreserved (EK071G) QC332	15-Mar-2017	----	----	----	15-Mar-2017	17-Mar-2017	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC332	15-Mar-2017	----	----	----	15-Mar-2017	16-Mar-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 10, 2017 2:32 PM**
Eurofins | mgt reference: **541792**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA
Address: Suite 2, 53 Burswood Road
Burswood
WA 6100
Project Name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA

Order No.:
Report #: 541792
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Apr 10, 2017 2:32 PM
Due: Apr 19, 2017
Priority: 5 Day
Contact Name: Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (specified)	Alkali Metals	Nitrogens (specified)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X				X	X					X	X		X		
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
22	SWL22-1	Apr 10, 2017		Water	P17-Ap07646	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
23	SWL22-2	Apr 10, 2017		Water	P17-Ap07647	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24	SWL22-3	Apr 10, 2017		Water	P17-Ap07648	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						22	22	24	22	24	22	24	22	22	24	22	22	24	11	22	24	22	24	22	24	22	24	22	24	22	22	22	22	24	22	11	22	11	22	24	22	22	22	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **541792-W**
Project name NL_BASELINE GW_SW MONITORING
Project ID ENAUPERT04483AA
Received Date Apr 10, 2017

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			P17-Ap07625	P17-Ap07626	P17-Ap07627	P17-Ap07628
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	35	86	45	99
Ammonia (as N)	0.01	mg/L	0.06	0.09	1.3	0.08
Chloride	1	mg/L	400	2100	9900	1400
Conductivity (at 25°C)	1	uS/cm	1700	7200	28000	4900
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	40	0.07
Nitrate (as N)	0.02	mg/L	< 0.02	0.03	40	0.07
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	0.12	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	4.0	0.2
pH	0.1	pH Units	7.2	4.6	6.9	5.8
Phosphate total (as P)	0.05	mg/L	0.17	0.14	0.45	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	0.26	< 0.05
Sulphate (as SO ₄)	5	mg/L	31	180	870	150
Total Dissolved Solids	10	mg/L	1100	4000	20000	2700
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	5.3	0.3
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	45	0.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	110	< 20	100	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	110	< 20	100	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.18	0.34	0.52	1.9
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.13	< 0.05
Arsenic	0.001	mg/L	0.002	0.006	0.004	0.002
Arsenic (filtered)	0.001	mg/L	0.001	0.003	0.004	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	0.0012	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	0.00091	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.002	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	^{R05} 0.012	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.013	< 0.001
Iron	0.05	mg/L	1.5	2.6	0.39	9.0
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	0.27	6.6
Lead	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW54 Water	MW53 Water	MW52 Water	MW51 Water
Sample Matrix			P17-Ap07625	P17-Ap07626	P17-Ap07627	P17-Ap07628
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	0.11	^{R05} 0.038	0.17	^{R05} < 0.005
Manganese (filtered)	0.005	mg/L	0.050	0.045	0.17	0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	0.016	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.002	0.015	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.012	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.012	< 0.001
Zinc	0.005	mg/L	< 0.005	0.057	0.25	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	0.050	0.083	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	73	44	140	21
Magnesium	0.5	mg/L	27	200	620	110
Potassium	0.5	mg/L	7.3	17	94	6.6
Sodium	0.5	mg/L	160	980	4600	660

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			P17-Ap07629	P17-Ap07630	P17-Ap07631	P17-Ap07632
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	110	86	120	< 10
Ammonia (as N)	0.01	mg/L	0.15	0.04	0.02	0.11
Chloride	1	mg/L	2700	1600	850	470
Conductivity (at 25°C)	1	uS/cm	8600	5500	3200	2200
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.04	0.04	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	< 0.2
pH	0.1	pH Units	4.6	5.1	4.4	7.9
Phosphate total (as P)	0.05	mg/L	0.12	0.09	0.06	0.17
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.09
Sulphate (as SO ₄)	5	mg/L	160	220	110	27
Total Dissolved Solids	10	mg/L	4800	3200	1800	1100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.2
Total Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	< 0.2	0.2
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	210
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	210
Heavy Metals						
Aluminium	0.05	mg/L	2.8	0.78	2.4	1.3
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	0.09	< 0.05
Arsenic	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW50 Water	MW49 Water	MW48 Water	MW47 Water
Sample Matrix			P17-Ap07629	P17-Ap07630	P17-Ap07631	P17-Ap07632
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.004	< 0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.6	0.49	0.57	0.37
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	0.003	^{R05} 0.20	0.004	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	0.025	< 0.001	< 0.001
Manganese	0.005	mg/L	^{R05} 0.014	^{R05} 0.010	^{R05} 0.019	0.010
Manganese (filtered)	0.005	mg/L	0.016	0.011	0.023	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	0.004	0.009	< 0.001
Nickel (filtered)	0.001	mg/L	0.001	0.003	0.008	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	0.025	0.015	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	0.016	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	28	28	12	59
Magnesium	0.5	mg/L	170	150	63	41
Potassium	0.5	mg/L	35	14	8.7	3.2
Sodium	0.5	mg/L	1400	770	430	300

Client Sample ID			MW46 Water	MW45 Water	MW43 Water	SWL20-1 Water
Sample Matrix			P17-Ap07633	P17-Ap07634	P17-Ap07635	P17-Ap07636
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	33	< 10	140	14
Ammonia (as N)	0.01	mg/L	0.37	0.36	1.4	0.05
Chloride	1	mg/L	620	460	1200	1300
Conductivity (at 25°C)	1	uS/cm	2700	2000	4200	4800
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.3	< 0.2	3.7	0.4
pH	0.1	pH Units	7.3	7.8	6.4	7.2
Phosphate total (as P)	0.05	mg/L	0.11	0.14	0.37	0.08
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.06	0.06	< 0.05
Sulphate (as SO4)	5	mg/L	6.2	9.2	44	75
Total Dissolved Solids	10	mg/L	1600	1100	3600	2600
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.4	5.1	0.5
Total Nitrogen (as N)	0.2	mg/L	0.7	0.4	5.1	0.5
Turbidity	1	NTU	-	-	-	10
E.coli	1	MPN/100mL	-	-	-	62
Thermotolerant Coliforms	1	MPN/100mL	-	-	-	120

Client Sample ID			MW46 Water P17-Ap07633 Apr 10, 2017	MW45 Water P17-Ap07634 Apr 10, 2017	MW43 Water P17-Ap07635 Apr 10, 2017	SWL20-1 Water P17-Ap07636 Apr 10, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	220	220	150	33
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	220	220	150	33
Heavy Metals						
Aluminium	0.05	mg/L	0.86	1.5	1.9	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	1.4	< 0.05
Arsenic	0.001	mg/L	< 0.001	0.002	0.004	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.010	< 0.001
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	0.010	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.71	0.56	0.24	1.1
Iron (filtered)	0.05	mg/L	0.05	< 0.05	0.09	0.18
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.005	< 0.005	0.008	^{R05} 0.009
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Zinc	0.005	mg/L	0.018	0.020	0.008	0.009
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	89	65	66	11
Magnesium	0.5	mg/L	53	38	110	77
Potassium	0.5	mg/L	5.1	3.6	8.2	11
Sodium	0.5	mg/L	310	210	560	630

Client Sample ID			SWL20-2 Water P17-Ap07637 Apr 10, 2017	SWL20-3 Water P17-Ap07638 Apr 10, 2017	QC350 Water P17-Ap07639 Apr 10, 2017	QC351 Water P17-Ap07640 Apr 10, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	12	11	-	-
Ammonia (as N)	0.01	mg/L	0.06	0.07	-	-
Chloride	1	mg/L	1400	1400	-	-
Conductivity (at 25°C)	1	uS/cm	4500	4700	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	0.02	< 0.02	-	-

Client Sample ID			SWL20-2	SWL20-3	QC350	QC351
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap07637	P17-Ap07638	P17-Ap07639	P17-Ap07640
Date Sampled			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.5	-	-
pH	0.1	pH Units	7.1	7.1	-	-
Phosphate total (as P)	0.05	mg/L	0.08	0.09	-	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	-	-
Sulphate (as SO ₄)	5	mg/L	75	75	-	-
Total Dissolved Solids	10	mg/L	2600	2700	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.6	-	-
Total Nitrogen (as N)	0.2	mg/L	0.6	0.6	-	-
Turbidity	1	NTU	5.0	9.5	-	-
E.coli	1	MPN/100mL	96	41	-	-
Thermotolerant Coliforms	1	MPN/100mL	300	330	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	27	25	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	27	25	-	-
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	-	-
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	1.2	-	-
Iron (filtered)	0.05	mg/L	0.21	0.21	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	^{R05} 0.009	^{R05} 0.009	-	-
Manganese (filtered)	0.005	mg/L	0.010	0.010	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	-	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	11	12	-	-
Magnesium	0.5	mg/L	77	79	-	-
Potassium	0.5	mg/L	11	11	-	-
Sodium	0.5	mg/L	640	660	-	-

Client Sample ID			QC352 Water P17-Ap07641 Apr 10, 2017	SWL19-1 Water P17-Ap07642 Apr 10, 2017	SWL18-3 Water P17-Ap07643 Apr 10, 2017	SWL18-2 Water P17-Ap07644 Apr 10, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	12	13	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.07	< 0.01	< 0.01	0.01
Chloride	1	mg/L	1400	1300	1400	1400
Conductivity (at 25°C)	1	uS/cm	4400	4600	4700	4700
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.3	0.7	0.9
pH	0.1	pH Units	7.1	6.2	7.6	7.6
Phosphate total (as P)	0.05	mg/L	0.08	0.07	0.09	0.10
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	76	140	99	100
Total Dissolved Solids	10	mg/L	2600	2500	3000	2900
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	< 0.2	0.9	0.8
Total Nitrogen (as N)	0.2	mg/L	0.5	1.3	0.7	0.9
Turbidity	1	NTU	9.2	63	2.4	4.0
E.coli	1	MPN/100mL	120	10	170	85
Thermotolerant Coliforms	1	MPN/100mL	240	63	>24000	6400
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	64	63
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	26	< 20	64	63
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	0.32	0.55	0.73
Iron (filtered)	0.05	mg/L	0.21	< 0.05	0.32	0.27
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.009	0.010	0.019	0.016
Manganese (filtered)	0.005	mg/L	0.009	0.010	0.013	0.009
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			QC352 Water	SWL19-1 Water	SWL18-3 Water	SWL18-2 Water
Sample Matrix			P17-Ap07641	P17-Ap07642	P17-Ap07643	P17-Ap07644
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	11	11	32	31
Magnesium	0.5	mg/L	77	87	100	97
Potassium	0.5	mg/L	11	9.9	14	17
Sodium	0.5	mg/L	670	600	670	700

Client Sample ID			SWL18-1 Water	SWL22-1 Water	SWL22-2 Water	SWL22-3 Water
Sample Matrix			P17-Ap07645	P17-Ap07646	P17-Ap07647	P17-Ap07648
Eurofins mgt Sample No.			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	< 10	11	10	12
Ammonia (as N)	0.01	mg/L	0.02	0.01	0.02	0.03
Chloride	1	mg/L	1400	1300	1300	1300
Conductivity (at 25°C)	1	uS/cm	4900	3900	4300	4500
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.8	1.5	1.5	1.4
pH	0.1	pH Units	7.5	7.7	7.6	7.6
Phosphate total (as P)	0.05	mg/L	0.09	0.46	0.51	0.50
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.41	0.41	0.41
Sulphate (as SO ₄)	5	mg/L	100	58	57	57
Total Dissolved Solids	10	mg/L	3000	2800	2700	2800
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	1.3	1.3	1.3
Total Nitrogen (as N)	0.2	mg/L	0.8	1.5	1.5	1.4
Turbidity	1	NTU	2.8	13	17	12
E.coli	1	MPN/100mL	100	10	^{M15} <10	10
Thermotolerant Coliforms	1	MPN/100mL	430	380	260	260
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	59	110	110	110
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	59	110	110	110
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	^{R05} 0.001	0.001	0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.002	0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.53	1.6	1.5	2.1
Iron (filtered)	0.05	mg/L	0.28	0.77	0.79	0.81
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL18-1	SWL22-1	SWL22-2	SWL22-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap07645	P17-Ap07646	P17-Ap07647	P17-Ap07648
Date Sampled			Apr 10, 2017	Apr 10, 2017	Apr 10, 2017	Apr 10, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.016	0.10	0.10	0.12
Manganese (filtered)	0.005	mg/L	0.012	0.053	0.062	0.056
Mercury	0.0001	mg/L	< 0.0001	^{R05} < 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	0.002	0.002	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	30	41	46	42
Magnesium	0.5	mg/L	97	92	100	91
Potassium	0.5	mg/L	13	16	18	21
Sodium	0.5	mg/L	640	550	630	590

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 12, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 12, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 12, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 12, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 18, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 12, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 12, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 12, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 11, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 11, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 11, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 12, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 11, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 11, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Apr 11, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Apr 11, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 12, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 12, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 12, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 12, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 10, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 12, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Apr 10, 2017 2:32 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 541792	Due: Apr 19, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Thermotolerant Coliforms	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X			X		X												X	X	X												X		X	
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X								X	X		X
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
10	MW45	Apr 10, 2017		Water	P17-Ap07634	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW43	Apr 10, 2017		Water	P17-Ap07635	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
12	SWL20-1	Apr 10, 2017		Water	P17-Ap07636	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
13	SWL20-2	Apr 10, 2017		Water	P17-Ap07637	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
14	SWL20-3	Apr 10, 2017		Water	P17-Ap07638	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
15	QC350	Apr 10, 2017		Water	P17-Ap07639			X	X	X			X			X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
16	QC351	Apr 10, 2017		Water	P17-Ap07640			X	X	X			X			X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
17	QC352	Apr 10, 2017		Water	P17-Ap07641	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL19-1	Apr 10, 2017		Water	P17-Ap07642	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL18-3	Apr 10, 2017		Water	P17-Ap07643	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
20	SWL18-2	Apr 10, 2017		Water	P17-Ap07644	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
21	SWL18-1	Apr 10, 2017		Water	P17-Ap07645	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Apr 10, 2017 2:32 PM
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Project Name:	NL_BASELINE GW_SW MONITORING	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)		
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X									X	X	X						X	X			X		X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X					X	X			X			
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
22	SWL22-1	Apr 10, 2017		Water	P17-Ap07646	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
23	SWL22-2	Apr 10, 2017		Water	P17-Ap07647	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24	SWL22-3	Apr 10, 2017		Water	P17-Ap07648	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						22	22	24	22	24	22	24	22	22	24	22	22	24	11	22	24	22	24	22	24	22	24	22	24	22	22	22	22	24	22	11	22	11	22	24	22	22	22		

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	113			70-130	Pass		
Ammonia (as N)	%	90			70-130	Pass		
Chloride	%	104			70-130	Pass		
Nitrate & Nitrite (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	95			70-130	Pass		
Nitrite (as N)	%	106			70-130	Pass		
Phosphate total (as P)	%	89			70-130	Pass		
Phosphorus reactive (as P)	%	113			70-130	Pass		
Sulphate (as SO ₄)	%	100			70-130	Pass		
Total Dissolved Solids	%	96			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	89			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	98			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	98			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	84			70-130	Pass		
Aluminium (filtered)	%	100			70-130	Pass		
Arsenic	%	84			70-130	Pass		
Arsenic (filtered)	%	102			70-130	Pass		
Cadmium	%	83			70-130	Pass		
Cadmium (filtered)	%	103			70-130	Pass		
Chromium	%	84			70-130	Pass		
Chromium (filtered)	%	107			70-130	Pass		
Copper	%	83			70-130	Pass		
Copper (filtered)	%	106			70-130	Pass		
Iron	%	77			70-130	Pass		
Iron (filtered)	%	102			70-130	Pass		
Lead	%	84			70-130	Pass		
Lead (filtered)	%	99			70-130	Pass		
Manganese	%	81			70-130	Pass		
Manganese (filtered)	%	103			70-130	Pass		
Mercury	%	78			70-130	Pass		
Mercury (filtered)	%	89			70-130	Pass		
Nickel	%	83			70-130	Pass		
Nickel (filtered)	%	103			70-130	Pass		
Selenium	%	87			70-130	Pass		
Selenium (filtered)	%	112			70-130	Pass		
Zinc	%	83			70-130	Pass		
Zinc (filtered)	%	103			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	96			70-130	Pass		
Magnesium	%	96			70-130	Pass		
Potassium	%	76			70-130	Pass		
Sodium	%	86			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Alkalinity (speciated)								
Total Alkalinity (as CaCO ₃)	P17-Ap09255	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Alkali Metals								
Magnesium	S17-Ap07772	NCP	%	71		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sodium	S17-Ap07772	NCP	%	84		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	P17-Ap07626	CP	%	106		70-130	Pass	
Aluminium (filtered)	P17-Ap07626	CP	%	129		70-130	Pass	
Arsenic	P17-Ap07626	CP	%	88		70-130	Pass	
Arsenic (filtered)	P17-Ap07626	CP	%	108		70-130	Pass	
Cadmium	P17-Ap07626	CP	%	89		70-130	Pass	
Cadmium (filtered)	P17-Ap07626	CP	%	107		70-130	Pass	
Chromium	P17-Ap07626	CP	%	91		70-130	Pass	
Chromium (filtered)	P17-Ap07626	CP	%	117		70-130	Pass	
Copper	P17-Ap07626	CP	%	81		70-130	Pass	
Copper (filtered)	P17-Ap07626	CP	%	77		70-130	Pass	
Iron	P17-Ap07626	CP	%	78		70-130	Pass	
Iron (filtered)	P17-Ap07626	CP	%	116		70-130	Pass	
Lead	P17-Ap07626	CP	%	82		70-130	Pass	
Lead (filtered)	P17-Ap07626	CP	%	71		70-130	Pass	
Manganese	P17-Ap07626	CP	%	92		70-130	Pass	
Manganese (filtered)	P17-Ap07626	CP	%	125		70-130	Pass	
Mercury	P17-Ap07626	CP	%	77		70-130	Pass	
Mercury (filtered)	P17-Ap07626	CP	%	107		70-130	Pass	
Nickel	P17-Ap07626	CP	%	82		70-130	Pass	
Nickel (filtered)	P17-Ap07626	CP	%	102		70-130	Pass	
Selenium	P17-Ap07626	CP	%	91		70-130	Pass	
Selenium (filtered)	P17-Ap07626	CP	%	71		70-130	Pass	
Zinc	P17-Ap07626	CP	%	75		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	P17-Ap07626	CP	%	90		70-130	Pass	
Potassium	P17-Ap07626	CP	%	82		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ap07628	CP	%	100		70-130	Pass	
Chloride	P17-Ap07628	CP	%	78		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ap07628	CP	%	97		70-130	Pass	
Nitrate (as N)	P17-Ap07628	CP	%	96		70-130	Pass	
Nitrite (as N)	P17-Ap07628	CP	%	99		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphate total (as P)	P17-Ap07632	CP	%	102		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	P17-Ap07632	CP	%	77		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	P17-Ap07634	CP	%	109		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO3)	P17-Ap03770	NCP	%	92		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ap07638	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ap07638	CP	%	96		70-130	Pass	
Nitrate (as N)	P17-Ap07638	CP	%	96		70-130	Pass	
Nitrite (as N)	P17-Ap07638	CP	%	103		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
				Result 1					
Sulphate (as SO ₄)	P17-Ap07643	CP	%	102			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	P17-Ap07644	CP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	P17-Ap07645	CP	%	113			70-130	Pass	
Cadmium (filtered)	P17-Ap07645	CP	%	112			70-130	Pass	
Chromium (filtered)	P17-Ap07645	CP	%	123			70-130	Pass	
Copper (filtered)	P17-Ap07645	CP	%	76			70-130	Pass	
Mercury (filtered)	P17-Ap07645	CP	%	99			70-130	Pass	
Nickel (filtered)	P17-Ap07645	CP	%	106			70-130	Pass	
Selenium (filtered)	P17-Ap07645	CP	%	71			70-130	Pass	
Zinc (filtered)	P17-Ap07645	CP	%	102			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphorus reactive (as P)	P17-Ap07646	CP	%	125			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P17-Ap07625	CP	mg/L	35	30	15	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	P17-Ap07625	CP	mg/L	0.18	0.18	<1	30%	Pass	
Arsenic	P17-Ap07625	CP	mg/L	0.002	0.002	20	30%	Pass	
Arsenic (filtered)	P17-Ap07625	CP	mg/L	0.001	0.001	14	30%	Pass	
Cadmium	P17-Ap07625	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	P17-Ap07625	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P17-Ap07625	CP	mg/L	1.5	1.8	18	30%	Pass	
Lead	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	P17-Ap07625	CP	mg/L	0.11	0.11	<1	30%	Pass	
Manganese (filtered)	P17-Ap07625	CP	mg/L	0.050	0.047	5.0	30%	Pass	
Mercury	P17-Ap07625	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	P17-Ap07625	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S17-Ap07904	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	P17-Ap07625	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	S17-Ap12134	NCP	mg/L	0.47	0.47	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P17-Ap07626	CP	mg/L	86	78	10	30%	Pass	
Conductivity (at 25°C)	P17-Ap07626	CP	uS/cm	7200	7100	<1	30%	Pass	
pH	P17-Ap07626	CP	pH Units	4.6	4.6	pass	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ap07626	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	P17-Ap07626	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	P17-Ap07626	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	P17-Ap07626	CP	mg/L	< 20	< 20	<1	30%	Pass	

Duplicate								
				Result 1	Result 2	RPD		
Chloride	P17-Ap07627	CP	mg/L	9900	11000	7.3	30%	Pass
Sulphate (as SO ₄)	P17-Ap07627	CP	mg/L	870	870	<1	30%	Pass
Total Dissolved Solids	P17-Ap07627	CP	mg/L	20000	20000	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ap07628	CP	mg/L	0.08	0.08	7.0	30%	Pass
Nitrate & Nitrite (as N)	P17-Ap07628	CP	mg/L	0.07	0.07	<1	30%	Pass
Nitrate (as N)	P17-Ap07628	CP	mg/L	0.07	0.07	<1	30%	Pass
Nitrite (as N)	P17-Ap07628	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	P17-Ap07631	CP	mg/L	0.06	0.06	7.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	P17-Ap07631	CP	mg/L	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	P17-Ap07634	CP	mg/L	0.06	0.07	24	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Heavy Metals								
Aluminium (filtered)	P17-Ap07635	CP	mg/L	1.4	1.6	10	30%	Pass
Arsenic (filtered)	P17-Ap07635	CP	mg/L	0.003	0.003	4.0	30%	Pass
Cadmium (filtered)	P17-Ap07635	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P17-Ap07635	CP	mg/L	0.010	0.011	9.0	30%	Pass
Copper (filtered)	P17-Ap07635	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	P17-Ap07635	CP	mg/L	0.09	0.08	10	30%	Pass
Lead (filtered)	P17-Ap07635	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P17-Ap07635	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	P17-Ap07635	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	P17-Ap07635	CP	mg/L	0.002	0.002	7.0	30%	Pass
Selenium (filtered)	P17-Ap07635	CP	mg/L	0.003	0.004	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	P17-Ap07636	CP	mg/L	14	13	11	30%	Pass
Turbidity	B17-Ap07141	NCP	NTU	59	60	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Heavy Metals								
Aluminium	P17-Ap07636	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic	P17-Ap07636	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	P17-Ap07636	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Copper	P17-Ap07636	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P17-Ap07636	CP	mg/L	1.1	1.0	7.0	30%	Pass
Lead	P17-Ap07636	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	P17-Ap07636	CP	mg/L	0.009	0.008	11	30%	Pass
Mercury	P17-Ap07636	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	P17-Ap07636	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Alkali Metals								
Calcium	P17-Ap07636	CP	mg/L	11	11	5.0	30%	Pass
Magnesium	P17-Ap07636	CP	mg/L	77	74	4.0	30%	Pass
Potassium	P17-Ap07636	CP	mg/L	11	10	6.0	30%	Pass
Sodium	P17-Ap07636	CP	mg/L	630	620	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	P17-Ap07637	CP	mg/L	2600	2700	2.0	30%	Pass

Duplicate				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ap07638	CP	mg/L	0.07	0.07	8.0	30%	Pass
Nitrate & Nitrite (as N)	P17-Ap07638	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	P17-Ap07638	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	P17-Ap07638	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphate total (as P)	P17-Ap07641	CP	mg/L	0.08	0.08	6.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	P17-Ap07641	CP	mg/L	0.6	0.7	7.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Chloride	P17-Ap07642	CP	mg/L	1300	1300	1.9	30%	Pass
Phosphorus reactive (as P)	P17-Ap07642	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Sulphate (as SO ₄)	P17-Ap07642	CP	mg/L	140	140	1.4	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P17-Ap07644	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	P17-Ap07644	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P17-Ap07644	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P17-Ap07644	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P17-Ap07644	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	P17-Ap07644	CP	mg/L	0.27	0.28	4.0	30%	Pass
Manganese (filtered)	P17-Ap07644	CP	mg/L	0.009	0.009	6.0	30%	Pass
Nickel (filtered)	P17-Ap07644	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	P17-Ap07646	CP	mg/L	0.41	0.43	6.3	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	P17-Ap07647	CP	mg/L	10	10	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Acidity (as CaCO ₃)	P17-Ap07648	CP	mg/L	12	11	7.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 11, 2017 3:35 PM**
Eurofins | mgt reference: **542072**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Additional samples SWL3-1, SWL3-2 and SWL3-3 received, logged for testing at client request

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA
Address: Suite 2, 53 Burswood Road
Burswood
WA 6100

Order No.:
Report #: 542072
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Apr 11, 2017 3:35 PM
Due: Apr 20, 2017
Priority: 5 Day
Contact Name: Richelle Bunbury

Project Name: NL_BASELINE GW_SW MONITORING LABORATORY
Project ID: ENAUPERT04483AA

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (specified)	Alkali Metals	Nitrogens (specified)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X					X	X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X				X	X						X	X		X		
Brisbane Laboratory - NATA Site # 20794																																												
Perth Laboratory - NATA Site # 18217																																												
22	SWL4-2	Apr 11, 2017		Water	P17-Ap09312	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
23	SWL3-1	Apr 11, 2017		Water	P17-Ap09313	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24	SWL3-2	Apr 11, 2017		Water	P17-Ap09314	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25	SWL3-3	Apr 11, 2017		Water	P17-Ap09315	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						23	23	25	23	25	23	25	23	23	25	23	23	25	11	23	25	23	25	23	25	23	25	23	25	23	23	23	23	23	23	23	11	23	11	23	25	23	23	23

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 18217 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **542072-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA
Received Date Apr 11, 2017

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			P17-Ap09291	P17-Ap09292	P17-Ap09293	P17-Ap09294
Eurofins mgt Sample No.			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	23	410	640
Ammonia (as N)	0.01	mg/L	0.07	0.09	0.15	0.04
Chloride	1	mg/L	47	79	20	19
Conductivity (at 25°C)	1	uS/cm	420	610	360	170
Nitrate & Nitrite (as N)	0.05	mg/L	14	0.10	< 0.05	0.17
Nitrate (as N)	0.02	mg/L	14	0.09	< 0.02	0.15
Nitrite (as N)	0.02	mg/L	0.04	< 0.02	< 0.02	0.02
Organic Nitrogen (as N)	0.2	mg/L	1.5	0.6	0.4	0.4
pH	0.1	pH Units	7.7	7.0	6.7	6.6
Phosphate total (as P)	0.05	mg/L	0.19	0.09	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	0.12	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	33	30	7.7	< 5
Total Dissolved Solids	10	mg/L	^{Q19} 490	380	230	100
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.6	0.7	0.6	0.4
Total Nitrogen (as N)	0.2	mg/L	16	0.8	0.6	0.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	140	91	110	38
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	140	91	110	38
Heavy Metals						
Aluminium	0.05	mg/L	0.98	0.20	0.23	0.07
Aluminium (filtered)	0.05	mg/L	< 0.05	0.12	0.22	0.06
Arsenic	0.001	mg/L	0.002	< 0.001	^{R05} 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.002	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.21	0.45	0.06	0.06
Iron (filtered)	0.05	mg/L	< 0.05	0.21	< 0.05	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW1 Water	MW2 Water	MW3 Water	MW4 Water
Sample Matrix			P17-Ap09291	P17-Ap09292	P17-Ap09293	P17-Ap09294
Eurofins mgt Sample No.			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	0.022	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.020	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.019	0.013	0.006	0.006
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	64	54	48	19
Magnesium	0.5	mg/L	6.5	8.4	7.3	1.5
Potassium	0.5	mg/L	22	< 0.5	2.0	< 0.5
Sodium	0.5	mg/L	23	36	9.3	8.6

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			P17-Ap09295	P17-Ap09296	P17-Ap09297	P17-Ap09298
Eurofins mgt Sample No.			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)						
Acidity (as CaCO3)	10	mg/L	350	260	49	11
Ammonia (as N)	0.01	mg/L	0.39	0.21	0.03	0.02
Chloride	1	mg/L	62	27	16	16
Conductivity (at 25°C)	1	uS/cm	290	280	160	100
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	2.6	3.3
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	2.6	3.3
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.0	0.5	0.5	0.3
pH	0.1	pH Units	4.8	5.5	4.4	6.0
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	< 5	50	14	< 5
Total Dissolved Solids	10	mg/L	240	180	81	96
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.4	0.7	0.5	0.3
Total Nitrogen (as N)	0.2	mg/L	1.4	0.7	3.1	3.6
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.3	0.72	1.4	1.2
Aluminium (filtered)	0.05	mg/L	0.96	0.65	1.3	0.12
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW5 Water	MW6 Water	MW7 Water	MW8 Water
Sample Matrix			P17-Ap09295	P17-Ap09296	P17-Ap09297	P17-Ap09298
Eurofins mgt Sample No.			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.002	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.44	0.24	0.89	0.28
Iron (filtered)	0.05	mg/L	0.33	0.21	0.22	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.001	< 0.001	0.003	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.007	< 0.005	0.008	0.013
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	4.0	6.1	9.6	8.1
Magnesium	0.5	mg/L	5.9	4.3	2.4	1.0
Potassium	0.5	mg/L	1.5	6.0	1.3	< 0.5
Sodium	0.5	mg/L	30	26	5.8	6.3

Client Sample ID			MW9 Water	MW10 Water	MW12 Water	QC356 Water
Sample Matrix			P17-Ap09299	P17-Ap09300	P17-Ap09301	P17-Ap09302
Eurofins mgt Sample No.			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	33	35	31	-
Ammonia (as N)	0.01	mg/L	0.33	0.06	0.02	-
Chloride	1	mg/L	15	20	32	-
Conductivity (at 25°C)	1	uS/cm	140	370	200	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.50	1.1	< 0.05	-
Nitrate (as N)	0.02	mg/L	0.49	1.0	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Organic Nitrogen (as N)	0.2	mg/L	1.8	0.5	0.3	-
pH	0.1	pH Units	5.9	7.2	4.2	-
Phosphate total (as P)	0.05	mg/L	0.11	< 0.05	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Sulphate (as SO4)	5	mg/L	7.3	9.1	11	-
Total Dissolved Solids	10	mg/L	79	240	110	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.5	0.4	0.3	-
Total Nitrogen (as N)	0.2	mg/L	2.0	1.5	0.3	-

Client Sample ID			MW9 Water P17-Ap09299 Apr 11, 2017	MW10 Water P17-Ap09300 Apr 11, 2017	MW12 Water P17-Ap09301 Apr 11, 2017	QC356 Water P17-Ap09302 Apr 11, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	120	< 20	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	120	< 20	-
Heavy Metals						
Aluminium	0.05	mg/L	0.57	0.12	2.8	-
Aluminium (filtered)	0.05	mg/L	0.28	0.06	2.4	< 0.05
Arsenic	0.001	mg/L	0.001	< 0.001	0.001	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.001	0.001	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	2.7	1.7	1.4	-
Iron (filtered)	0.05	mg/L	2.0	0.38	0.47	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.001	0.003	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.012	0.007	^{R05} 0.014	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.015	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	7.0	63	0.9	-
Magnesium	0.5	mg/L	1.7	4.6	4.4	-
Potassium	0.5	mg/L	0.7	0.7	< 0.5	-
Sodium	0.5	mg/L	10	8.7	24	-

Client Sample ID			QC357 Water P17-Ap09303 Apr 11, 2017	QC355 Water P17-Ap09304 Apr 11, 2017	SWL1-1 Water P17-Ap09305 Apr 11, 2017	SWL1-2 Water P17-Ap09306 Apr 11, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	-	10	13	< 10
Ammonia (as N)	0.01	mg/L	-	0.04	0.02	0.01
Chloride	1	mg/L	-	46	76	76
Conductivity (at 25°C)	1	uS/cm	-	200	490	490
Nitrate & Nitrite (as N)	0.05	mg/L	-	14	0.11	< 0.05
Nitrate (as N)	0.02	mg/L	-	14	0.10	< 0.02
Nitrite (as N)	0.02	mg/L	-	0.03	< 0.02	< 0.02

Client Sample ID			QC357	QC355	SWL1-1	SWL1-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap09303	P17-Ap09304	P17-Ap09305	P17-Ap09306
Date Sampled			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	-	0.3	0.3	0.3
pH	0.1	pH Units	-	7.7	7.0	7.1
Phosphate total (as P)	0.05	mg/L	-	0.20	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	-	0.10	< 0.05	< 0.05
Sulphate (as SO4)	5	mg/L	-	32	37	36
Total Dissolved Solids	10	mg/L	-	430	250	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	-	0.3	0.3	0.3
Total Nitrogen (as N)	0.2	mg/L	-	14	0.4	0.3
Turbidity	1	NTU	-	-	< 1	1.2
E.coli	1	MPN/100mL	-	-	77	1
Thermotolerant Coliforms	1	MPN/100mL	-	-	1700	140
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	-	85	46	50
Carbonate Alkalinity (as CaCO3)	10	mg/L	-	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	10	mg/L	-	< 10	< 10	< 10
Total Alkalinity (as CaCO3)	20	mg/L	-	85	46	50
Heavy Metals						
Aluminium	0.05	mg/L	-	0.87	0.07	0.06
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	-	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	-	0.002	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	-	0.002	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	-	0.16	0.06	0.08
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Lead	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	-	< 0.005	0.007	0.007
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.006	< 0.005
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	-	0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	-	0.011	0.014	0.013
Zinc (filtered)	0.005	mg/L	< 0.005	0.005	0.008	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	-	71	19	18
Magnesium	0.5	mg/L	-	7.2	12	11
Potassium	0.5	mg/L	-	24	4.8	4.4
Sodium	0.5	mg/L	-	24	48	50

Client Sample ID			SWL1-3	SWL2-1	SWL2-2	SWL2-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap09307	P17-Ap09308	P17-Ap09309	P17-Ap09310
Date Sampled			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.01	< 0.01	0.02	0.02
Chloride	1	mg/L	68	71	70	69
Conductivity (at 25°C)	1	uS/cm	410	450	450	450
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.4
pH	0.1	pH Units	7.3	7.5	7.4	7.6
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	5.6	35	37	36
Total Dissolved Solids	10	mg/L	210	270	230	260
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.4	0.4
Turbidity	1	NTU	4.3	< 1	< 1	< 1
E.coli	1	MPN/100mL	^{M15} <10	<1	1	<1
Thermotolerant Coliforms	1	MPN/100mL	230	5	21	15
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	65	44	45	44
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	65	44	45	44
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	0.17	0.17	0.17
Aluminium (filtered)	0.05	mg/L	< 0.05	0.15	0.15	0.15
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.10	0.09	0.09
Iron (filtered)	0.05	mg/L	< 0.05	0.06	0.06	0.06
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	^{R05} < 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.021	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.013	0.008	0.008	0.008
Zinc (filtered)	0.005	mg/L	0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			SWL1-3	SWL2-1	SWL2-2	SWL2-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap09307	P17-Ap09308	P17-Ap09309	P17-Ap09310
Date Sampled			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Test/Reference	LOR	Unit				
Alkali Metals						
Calcium	0.5	mg/L	19	14	13	13
Magnesium	0.5	mg/L	8.5	12	12	12
Potassium	0.5	mg/L	4.7	3.0	2.9	2.9
Sodium	0.5	mg/L	41	48	47	45

Client Sample ID			SWL4-1	SWL4-2	SWL3-1	SWL3-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap09311	P17-Ap09312	P17-Ap09313	P17-Ap09314
Date Sampled			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO₃)						
Acidity (as CaCO ₃)	10	mg/L	13	14	< 10	< 10
Ammonia (as N)	0.01	mg/L	0.09	< 0.01	0.03	0.03
Chloride	1	mg/L	150	150	66	66
Conductivity (at 25°C)	1	uS/cm	730	750	460	460
Nitrate & Nitrite (as N)	0.05	mg/L	0.17	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	0.17	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.2	0.3	0.4	0.6
pH	0.1	pH Units	6.5	6.4	7.6	7.6
Phosphate total (as P)	0.05	mg/L	0.13	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	65	63	11	11
Total Dissolved Solids	10	mg/L	380	380	240	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.3	0.3	0.4	0.6
Total Nitrogen (as N)	0.2	mg/L	0.5	0.3	0.4	0.6
Turbidity	1	NTU	35	12	< 1	1.3
E.coli	1	MPN/100mL	10	20	2	1
Thermotolerant Coliforms	1	MPN/100mL	1400	4000	43	41
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	64	63
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	64	63
Heavy Metals						
Aluminium	0.05	mg/L	0.10	0.12	0.30	0.30
Aluminium (filtered)	0.05	mg/L	0.09	0.10	0.27	0.25
Arsenic	0.001	mg/L	< 0.001	^{R05} < 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.22	0.51	0.19	0.17
Iron (filtered)	0.05	mg/L	0.06	0.27	0.13	0.12
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			SWL4-1	SWL4-2	SWL3-1	SWL3-2
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			P17-Ap09311	P17-Ap09312	P17-Ap09313	P17-Ap09314
Date Sampled			Apr 11, 2017	Apr 11, 2017	Apr 11, 2017	Apr 11, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.006	0.008	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	0.006	0.008	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.011	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.011	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	20	23	22	22
Magnesium	0.5	mg/L	15	17	11	10
Potassium	0.5	mg/L	4.8	5.8	2.1	2.1
Sodium	0.5	mg/L	75	82	47	47

Client Sample ID			SWL3-3
Sample Matrix			Water
Eurofins mgt Sample No.			P17-Ap09315
Date Sampled			Apr 11, 2017
Test/Reference	LOR	Unit	
Acidity (as CaCO₃)			
Acidity (as CaCO ₃)	10	mg/L	< 10
Ammonia (as N)	0.01	mg/L	0.03
Chloride	1	mg/L	68
Conductivity (at 25°C)	1	uS/cm	460
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5
pH	0.1	pH Units	7.6
Phosphate total (as P)	0.05	mg/L	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05
Sulphate (as SO ₄)	5	mg/L	12
Total Dissolved Solids	10	mg/L	250
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5
Total Nitrogen (as N)	0.2	mg/L	0.5
Turbidity	1	NTU	1.2
E.coli	1	MPN/100mL	3
Thermotolerant Coliforms	1	MPN/100mL	20
Alkalinity (speciated)			
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	63
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	63

Client Sample ID			SWL3-3
Sample Matrix			Water
Eurofins mgt Sample No.			P17-Ap09315
Date Sampled			Apr 11, 2017
Test/Reference	LOR	Unit	
Heavy Metals			
Aluminium	0.05	mg/L	0.30
Aluminium (filtered)	0.05	mg/L	0.26
Arsenic	0.001	mg/L	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium	0.00005	mg/L	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005
Chromium	0.001	mg/L	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	0.17
Iron (filtered)	0.05	mg/L	0.12
Lead	0.001	mg/L	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury	0.0001	mg/L	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005
Alkali Metals			
Calcium	0.5	mg/L	21
Magnesium	0.5	mg/L	10
Potassium	0.5	mg/L	2.1
Sodium	0.5	mg/L	48

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 12, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 12, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 12, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 12, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 12, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 13, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 12, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 12, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 13, 2017	2 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 12, 2017	24 Hour
Thermotolerant Coliforms - Method: Inhouse LTM-MIC-6623: Thermotolerant Coliforms by MPN	Melbourne	Apr 12, 2017	24 Hour
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 12, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 13, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 13, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Apr 13, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Apr 13, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 12, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 12, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 12, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 12, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 11, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 12, 2017	7 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Apr 11, 2017 3:35 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 542072	Due: Apr 20, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)					
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X		X											X	X	X						X	X				X		X				
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X			X	X						X	X			X				
Brisbane Laboratory - NATA Site # 20794																																																
Perth Laboratory - NATA Site # 18217																																																
External Laboratory																																																
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																											
1	MW1	Apr 11, 2017		Water	P17-Ap09291	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
2	MW2	Apr 11, 2017		Water	P17-Ap09292	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
3	MW3	Apr 11, 2017		Water	P17-Ap09293	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4	MW4	Apr 11, 2017		Water	P17-Ap09294	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	MW5	Apr 11, 2017		Water	P17-Ap09295	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6	MW6	Apr 11, 2017		Water	P17-Ap09296	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7	MW7	Apr 11, 2017		Water	P17-Ap09297	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8	MW8	Apr 11, 2017		Water	P17-Ap09298	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9	MW9	Apr 11, 2017		Water	P17-Ap09299	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Company Name: Coffey Environments Pty Ltd WA
Address: Suite 2, 53 Burswood Road
Burswood
WA 6100

Order No.:
Report #: 542072
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Apr 11, 2017 3:35 PM
Due: Apr 20, 2017
Priority: 5 Day
Contact Name: Richelle Bunbury

Project Name: NL_BASELINE GW_SW MONITORING LABORATORY
Project ID: ENAUPERT04483AA

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail					Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271					X						X				X		X											X	X	X				X	X	X			X		X				
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X			X	X					X	X			X				
Brisbane Laboratory - NATA Site # 20794																																													
Perth Laboratory - NATA Site # 18217																																													
10	MW10	Apr 11, 2017		Water	P17-Ap09300	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW12	Apr 11, 2017		Water	P17-Ap09301	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	QC356	Apr 11, 2017		Water	P17-Ap09302			X	X	X			X			X						X	X	X	X	X	X											X							
13	QC357	Apr 11, 2017		Water	P17-Ap09303			X	X	X			X			X						X	X	X	X	X	X											X							
14	QC355	Apr 11, 2017		Water	P17-Ap09304	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
15	SWL1-1	Apr 11, 2017		Water	P17-Ap09305	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	SWL1-2	Apr 11, 2017		Water	P17-Ap09306	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
17	SWL1-3	Apr 11, 2017		Water	P17-Ap09307	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18	SWL2-1	Apr 11, 2017		Water	P17-Ap09308	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
19	SWL2-2	Apr 11, 2017		Water	P17-Ap09309	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
20	SWL2-3	Apr 11, 2017		Water	P17-Ap09310	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	SWL4-1	Apr 11, 2017		Water	P17-Ap09311	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	E.coli	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Thermolabile Coliforms	Turbidity	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)				
Melbourne Laboratory - NATA Site # 1254 & 14271						X						X			X		X		X										X	X	X													X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X											X	X			X	
Brisbane Laboratory - NATA Site # 20794																																															
Perth Laboratory - NATA Site # 18217																																															
22	SWL4-2	Apr 11, 2017		Water	P17-Ap09312	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
23	SWL3-1	Apr 11, 2017		Water	P17-Ap09313	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
24	SWL3-2	Apr 11, 2017		Water	P17-Ap09314	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
25	SWL3-3	Apr 11, 2017		Water	P17-Ap09315	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Test Counts						23	23	25	23	25	23	25	23	23	25	23	25	11	23	25	23	25	23	25	23	25	23	25	23	25	23	23	23	23	23	25	23	11	23	11	23	25	23	23	23		

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Acidity (as CaCO ₃)	%	113			70-130	Pass		
Ammonia (as N)	%	92			70-130	Pass		
Chloride	%	105			70-130	Pass		
Nitrate & Nitrite (as N)	%	94			70-130	Pass		
Nitrate (as N)	%	93			70-130	Pass		
Nitrite (as N)	%	100			70-130	Pass		
Phosphate total (as P)	%	94			70-130	Pass		
Phosphorus reactive (as P)	%	85			70-130	Pass		
Sulphate (as SO ₄)	%	103			70-130	Pass		
Total Dissolved Solids	%	101			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	90			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	98			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	98			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	115			70-130	Pass		
Aluminium (filtered)	%	109			70-130	Pass		
Arsenic	%	103			70-130	Pass		
Arsenic (filtered)	%	112			70-130	Pass		
Cadmium	%	103			70-130	Pass		
Cadmium (filtered)	%	113			70-130	Pass		
Chromium	%	101			70-130	Pass		
Chromium (filtered)	%	114			70-130	Pass		
Copper	%	104			70-130	Pass		
Copper (filtered)	%	120			70-130	Pass		
Iron	%	108			70-130	Pass		
Iron (filtered)	%	109			70-130	Pass		
Lead	%	106			70-130	Pass		
Lead (filtered)	%	118			70-130	Pass		
Manganese	%	101			70-130	Pass		
Manganese (filtered)	%	111			70-130	Pass		
Mercury	%	100			70-130	Pass		
Mercury (filtered)	%	105			70-130	Pass		
Nickel	%	107			70-130	Pass		
Nickel (filtered)	%	113			70-130	Pass		
Selenium	%	99			70-130	Pass		
Selenium (filtered)	%	101			70-130	Pass		
Zinc	%	112			70-130	Pass		
Zinc (filtered)	%	113			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	95			70-130	Pass		
Magnesium	%	102			70-130	Pass		
Potassium	%	80			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M17-Ap09447	NCP	%	95		70-130	Pass	
Sulphate (as SO ₄)	M17-Ap09238	NCP	%	94		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M17-Ap12166	NCP	%	94		70-130	Pass	
Spike - % Recovery								

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Alkalinity (speciated)				Result 1				
Total Alkalinity (as CaCO ₃)	P17-Ap09255	NCP	%	94		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	P17-Ap09292	CP	%	108		70-130	Pass	
Aluminium (filtered)	P17-Ap09292	CP	%	117		70-130	Pass	
Arsenic	P17-Ap09292	CP	%	107		70-130	Pass	
Arsenic (filtered)	P17-Ap09292	CP	%	127		70-130	Pass	
Cadmium	P17-Ap09292	CP	%	108		70-130	Pass	
Cadmium (filtered)	P17-Ap09292	CP	%	118		70-130	Pass	
Chromium	P17-Ap09292	CP	%	105		70-130	Pass	
Chromium (filtered)	P17-Ap09292	CP	%	116		70-130	Pass	
Copper	P17-Ap09292	CP	%	106		70-130	Pass	
Copper (filtered)	P17-Ap09292	CP	%	116		70-130	Pass	
Iron	P17-Ap09292	CP	%	111		70-130	Pass	
Iron (filtered)	P17-Ap09292	CP	%	110		70-130	Pass	
Lead	P17-Ap09292	CP	%	109		70-130	Pass	
Lead (filtered)	P17-Ap09292	CP	%	111		70-130	Pass	
Manganese	P17-Ap09292	CP	%	104		70-130	Pass	
Manganese (filtered)	P17-Ap09292	CP	%	115		70-130	Pass	
Mercury	P17-Ap09292	CP	%	104		70-130	Pass	
Mercury (filtered)	P17-Ap09292	CP	%	79		70-130	Pass	
Nickel	P17-Ap09292	CP	%	104		70-130	Pass	
Nickel (filtered)	P17-Ap09292	CP	%	112		70-130	Pass	
Selenium	P17-Ap09292	CP	%	105		70-130	Pass	
Selenium (filtered)	P17-Ap09292	CP	%	114		70-130	Pass	
Zinc	P17-Ap09292	CP	%	100		70-130	Pass	
Zinc (filtered)	P17-Ap09292	CP	%	114		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	P17-Ap09292	CP	%	98		70-130	Pass	
Magnesium	P17-Ap09292	CP	%	106		70-130	Pass	
Potassium	P17-Ap09292	CP	%	88		70-130	Pass	
Sodium	P17-Ap09292	CP	%	84		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	P17-Ap09299	CP	%	92		70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ap09299	CP	%	90		70-130	Pass	
Nitrate (as N)	P17-Ap09299	CP	%	90		70-130	Pass	
Nitrite (as N)	P17-Ap09299	CP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Phosphorus reactive (as P)	P17-Ap07634	NCP	%	109		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ap03770	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium (filtered)	P17-Ap09311	CP	%	109		70-130	Pass	
Arsenic (filtered)	P17-Ap09311	CP	%	110		70-130	Pass	
Cadmium (filtered)	P17-Ap09311	CP	%	109		70-130	Pass	
Chromium (filtered)	P17-Ap09311	CP	%	109		70-130	Pass	
Copper (filtered)	P17-Ap09311	CP	%	110		70-130	Pass	
Iron (filtered)	P17-Ap09311	CP	%	98		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	P17-Ap09311	CP	%	106			70-130	Pass	
Manganese (filtered)	P17-Ap09311	CP	%	107			70-130	Pass	
Mercury (filtered)	P17-Ap09311	CP	%	70			70-130	Pass	
Nickel (filtered)	P17-Ap09311	CP	%	104			70-130	Pass	
Selenium (filtered)	P17-Ap09311	CP	%	94			70-130	Pass	
Zinc (filtered)	P17-Ap09311	CP	%	106			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	P17-Ap09312	CP	%	106			70-130	Pass	
Arsenic	P17-Ap09312	CP	%	110			70-130	Pass	
Cadmium	P17-Ap09312	CP	%	112			70-130	Pass	
Chromium	P17-Ap09312	CP	%	107			70-130	Pass	
Copper	P17-Ap09312	CP	%	105			70-130	Pass	
Iron	P17-Ap09312	CP	%	105			70-130	Pass	
Lead	P17-Ap09312	CP	%	113			70-130	Pass	
Manganese	P17-Ap09312	CP	%	106			70-130	Pass	
Mercury	P17-Ap09312	CP	%	105			70-130	Pass	
Nickel	P17-Ap09312	CP	%	106			70-130	Pass	
Selenium	P17-Ap09312	CP	%	112			70-130	Pass	
Zinc	P17-Ap09312	CP	%	105			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	P17-Ap09312	CP	%	102			70-130	Pass	
Magnesium	P17-Ap09312	CP	%	115			70-130	Pass	
Potassium	P17-Ap09312	CP	%	100			70-130	Pass	
Spike - % Recovery									
				Result 1					
Phosphate total (as P)	P17-Ap09315	CP	%	82			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P17-Ap09259	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Chloride	M17-Ap09237	NCP	mg/L	66	65	1.8	30%	Pass	
Phosphorus reactive (as P)	M17-Ap08487	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO ₄)	M17-Ap09237	NCP	mg/L	350	350	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	P17-Ap09291	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Cadmium	P17-Ap09291	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Cadmium (filtered)	P17-Ap09291	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	P17-Ap09291	CP	mg/L	0.002	0.003	13	30%	Pass	
Chromium (filtered)	P17-Ap09291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	P17-Ap09291	CP	mg/L	0.002	0.002	14	30%	Pass	
Copper (filtered)	P17-Ap09291	CP	mg/L	0.002	0.002	1.0	30%	Pass	
Iron	P17-Ap09291	CP	mg/L	0.21	0.21	<1	30%	Pass	
Iron (filtered)	P17-Ap09291	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	P17-Ap09291	CP	mg/L	< 0.001	0.001	18	30%	Pass	
Lead (filtered)	P17-Ap09291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	P17-Ap09291	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	P17-Ap09291	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel	P17-Ap09291	CP	mg/L	0.001	0.001	16	30%	Pass	
Nickel (filtered)	P17-Ap09291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	P17-Ap09291	CP	mg/L	0.019	0.019	<1	30%	Pass	
Zinc (filtered)	P17-Ap09291	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ap09291	CP	mg/L	64	71	10	30%	Pass
Magnesium	P17-Ap09291	CP	mg/L	6.5	7.1	10	30%	Pass
Potassium	P17-Ap09291	CP	mg/L	22	25	10	30%	Pass
Sodium	P17-Ap09291	CP	mg/L	23	25	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ap09292	CP	uS/cm	610	600	2.0	30%	Pass
pH	P17-Ap09292	CP	pH Units	7.0	7.1	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ap09292	CP	mg/L	91	85	6.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ap09292	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ap09292	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ap09292	CP	mg/L	91	85	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ap09299	CP	mg/L	0.33	0.31	4.0	30%	Pass
Nitrate & Nitrite (as N)	P17-Ap09299	CP	mg/L	0.50	0.51	3.0	30%	Pass
Nitrate (as N)	P17-Ap09299	CP	mg/L	0.49	0.50	3.0	30%	Pass
Nitrite (as N)	P17-Ap09299	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	P17-Ap09301	CP	mg/L	2.8	2.8	2.0	30%	Pass
Aluminium (filtered)	P17-Ap09301	CP	mg/L	2.4	2.4	<1	30%	Pass
Arsenic	P17-Ap09301	CP	mg/L	0.001	< 0.001	15	30%	Pass
Arsenic (filtered)	P17-Ap09301	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	P17-Ap09301	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium	P17-Ap09301	CP	mg/L	0.001	0.001	4.0	30%	Pass
Chromium (filtered)	P17-Ap09301	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	P17-Ap09301	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P17-Ap09301	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P17-Ap09301	CP	mg/L	1.4	1.2	12	30%	Pass
Iron (filtered)	P17-Ap09301	CP	mg/L	0.47	0.47	1.0	30%	Pass
Lead	P17-Ap09301	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	P17-Ap09301	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Manganese (filtered)	P17-Ap09301	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	P17-Ap09301	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Mercury (filtered)	P17-Ap09301	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	P17-Ap09301	CP	mg/L	0.003	0.003	3.0	30%	Pass
Nickel (filtered)	P17-Ap09301	CP	mg/L	0.003	0.003	1.0	30%	Pass
Selenium	P17-Ap09301	CP	mg/L	< 0.001	0.001	5.0	30%	Pass
Selenium (filtered)	P17-Ap09301	CP	mg/L	< 0.001	0.001	3.0	30%	Pass
Zinc	P17-Ap09301	CP	mg/L	0.014	0.012	12	30%	Pass
Zinc (filtered)	P17-Ap09301	CP	mg/L	0.015	0.015	6.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ap09301	CP	mg/L	0.9	0.9	4.0	30%	Pass
Magnesium	P17-Ap09301	CP	mg/L	4.4	4.4	<1	30%	Pass
Potassium	P17-Ap09301	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass
Sodium	P17-Ap09301	CP	mg/L	24	24	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Turbidity	M17-Ap08834	NCP	NTU	350	340	2.0	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
Total Dissolved Solids	P17-Ap09309	CP	mg/L	230	250	8.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	P17-Ap09310	CP	mg/L	0.15	0.15	2.0	30%	Pass
Cadmium (filtered)	P17-Ap09310	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Chromium (filtered)	P17-Ap09310	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	P17-Ap09310	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	P17-Ap09310	CP	mg/L	0.06	0.06	2.0	30%	Pass
Lead (filtered)	P17-Ap09310	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	P17-Ap09310	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel (filtered)	P17-Ap09310	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	P17-Ap09310	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	P17-Ap09311	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	P17-Ap09311	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass
Copper	P17-Ap09311	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	P17-Ap09311	CP	mg/L	0.22	0.22	3.0	30%	Pass
Lead	P17-Ap09311	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	P17-Ap09311	CP	mg/L	0.006	0.007	11	30%	Pass
Mercury	P17-Ap09311	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	P17-Ap09311	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	P17-Ap09311	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	P17-Ap09311	CP	mg/L	0.011	0.012	9.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ap09311	CP	mg/L	20	21	6.0	30%	Pass
Magnesium	P17-Ap09311	CP	mg/L	15	16	6.0	30%	Pass
Potassium	P17-Ap09311	CP	mg/L	4.8	5.1	7.0	30%	Pass
Sodium	P17-Ap09311	CP	mg/L	75	80	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphate total (as P)	P17-Ap09312	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	P17-Ap09312	CP	mg/L	0.3	0.3	6.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ap09313	CP	uS/cm	460	460	<1	30%	Pass
pH	P17-Ap09313	CP	pH Units	7.6	7.6	pass	30%	Pass
Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ap09313	CP	mg/L	64	63	1.0	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ap09313	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ap09313	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ap09313	CP	mg/L	64	63	1.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 12, 2017 2:58 PM**
Eurofins | mgt reference: **542276**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Samples labeled QC258 and QC259 received that were not in the COC, logged as QC358 and QC359 according to COC

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name: Coffey Environments Pty Ltd WA
Address: Suite 2, 53 Burswood Road
Burswood
WA 6100
Project Name: NL_BASELINE GW_SW MONITORING
Project ID: ENAUPERT04483AA

Order No.:
Report #: 542276
Phone: 08 9355 7100
Fax: 08 9470 8601

Received: Apr 12, 2017 2:58 PM
Due: Apr 21, 2017
Priority: 5 Day
Contact Name: Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chloride	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Sulphate (as SO4)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Alkali Metals	Nitrogens (speciated)	
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X												X	X	X				X	X			X		X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X				X	X			X	X			X	
Brisbane Laboratory - NATA Site # 20794																																									
Perth Laboratory - NATA Site # 18217																																									
10	QC358	Apr 12, 2017		Water	P17-Ap10836		X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X			X	X					
11	QC359	Apr 12, 2017		Water	P17-Ap10837		X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X				X	X			X	X					
Test Counts						9	11	11	11	11	11	11	9	11	11	9	11	11	11	11	11	11	11	11	11	11	11	11	9	9	9	11	11	9	9	11	11	9	9	9	

Certificate of Analysis

Coffey Environments Pty Ltd WA
 Suite 2, 53 Burswood Road
 Burswood
 WA 6100



NATA Accredited
 Accreditation Number 1261
 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
 The results of the tests, calibrations and/or
 measurements included in this document are traceable
 to Australian/national standards.

Attention: **Richelle Bunbury**

Report **542276-W**
 Project name NL_BASELINE GW_SW MONITORING
 Project ID ENAUPERT04483AA
 Received Date Apr 12, 2017

Client Sample ID			MW27 Water P17-Ap10827 Apr 12, 2017	MW26 Water P17-Ap10828 Apr 12, 2017	MW25 Water P17-Ap10829 Apr 12, 2017	MW24 Water P17-Ap10830 Apr 12, 2017
Sample Matrix						
Eurofins mgt Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	50	85	13	43
Ammonia (as N)	0.01	mg/L	0.30	0.03	0.14	0.21
Chloride	1	mg/L	42	130	94	200
Conductivity (at 25°C)	1	uS/cm	210	720	460	930
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	1.4	8.7	0.29
Nitrate (as N)	0.02	mg/L	< 0.02	1.4	8.6	0.29
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.9	1.0	0.4
pH	0.1	pH Units	4.4	3.7	5.8	4.4
Phosphate total (as P)	0.05	mg/L	0.13	0.22	0.05	< 0.05
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	10	43	36	64
Total Dissolved Solids	10	mg/L	^{Q19} 220	430	230	470
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.7	0.9	1.1	0.6
Total Nitrogen (as N)	0.2	mg/L	0.7	2.3	9.8	0.9
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	^{R05} 0.65	^{R05} 1.7	1.1	1.5
Aluminium (filtered)	0.05	mg/L	0.67	1.8	0.46	1.4
Arsenic	0.001	mg/L	0.001	< 0.001	0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.003	0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.84	0.16	0.11	0.23
Iron (filtered)	0.05	mg/L	0.68	0.11	< 0.05	0.13
Lead	0.001	mg/L	< 0.001	0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW27 Water	MW26 Water	MW25 Water	MW24 Water
Sample Matrix			P17-Ap10827	P17-Ap10828	P17-Ap10829	P17-Ap10830
Eurofins mgt Sample No.			Apr 12, 2017	Apr 12, 2017	Apr 12, 2017	Apr 12, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	2.8	9.7	7.5	11
Magnesium	0.5	mg/L	4.6	13	14	27
Potassium	0.5	mg/L	1.9	3.2	3.2	4.1
Sodium	0.5	mg/L	22	84	41	95

Client Sample ID			MW23 Water	MW15 Water	MW14 Water	MW13 Water
Sample Matrix			P17-Ap10831	P17-Ap10832	P17-Ap10833	P17-Ap10834
Eurofins mgt Sample No.			Apr 12, 2017	Apr 12, 2017	Apr 12, 2017	Apr 12, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	11	41	20	89
Ammonia (as N)	0.01	mg/L	0.02	0.22	0.04	0.06
Chloride	1	mg/L	73	40	41	51
Conductivity (at 25°C)	1	uS/cm	700	350	270	350
Nitrate & Nitrite (as N)	0.05	mg/L	5.4	0.07	0.51	0.06
Nitrate (as N)	0.02	mg/L	5.4	0.05	0.49	0.05
Nitrite (as N)	0.02	mg/L	0.04	0.02	0.03	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	1.9	0.3	0.8	1.9
pH	0.1	pH Units	6.3	4.9	4.8	4.2
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.28
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	100	54	36	42
Total Dissolved Solids	10	mg/L	360	200	190	190
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.9	0.5	0.8	2.0
Total Nitrogen (as N)	0.2	mg/L	7.3	0.6	1.3	2.1
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	37	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	37	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.21	1.0	26	3.8
Aluminium (filtered)	0.05	mg/L	0.14	0.53	0.31	1.9
Arsenic	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW23 Water	MW15 Water	MW14 Water	MW13 Water
Sample Matrix			P17-Ap10831	P17-Ap10832	P17-Ap10833	P17-Ap10834
Eurofins mgt Sample No.			Apr 12, 2017	Apr 12, 2017	Apr 12, 2017	Apr 12, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.003	0.022	0.004
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	8.5	2.5	4.5
Iron (filtered)	0.05	mg/L	< 0.05	0.11	0.22	0.26
Lead	0.001	mg/L	< 0.001	0.003	0.006	0.002
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.007	0.005
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.017
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.010
Alkali Metals						
Calcium	0.5	mg/L	50	5.8	8.4	5.7
Magnesium	0.5	mg/L	8.5	8.3	3.7	5.5
Potassium	0.5	mg/L	9.5	1.7	0.7	1.2
Sodium	0.5	mg/L	49	29	27	32

Client Sample ID			MW11 Water	QC358 Water	QC359 Water
Sample Matrix			P17-Ap10835	P17-Ap10836	P17-Ap10837
Eurofins mgt Sample No.			Apr 12, 2017	Apr 12, 2017	Apr 12, 2017
Date Sampled					
Test/Reference	LOR	Unit			
Acidity (as CaCO3)					
Acidity (as CaCO3)	10	mg/L	56	-	-
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	0.04	-	-
Chloride					
Chloride	1	mg/L	98	-	-
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	670	-	-
Nitrate & Nitrite (as N)					
Nitrate & Nitrite (as N)	0.05	mg/L	0.11	-	-
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	0.11	-	-
Nitrite (as N)					
Nitrite (as N)	0.02	mg/L	< 0.02	-	-
Organic Nitrogen (as N)					
Organic Nitrogen (as N)	0.2	mg/L	0.4	-	-
pH					
pH	0.1	pH Units	4.3	-	-
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	< 0.05	-	-
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	-	-
Sulphate (as SO4)					
Sulphate (as SO4)	5	mg/L	110	-	-
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	410	-	-
Total Kjeldahl Nitrogen (as N)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	-	-
Total Nitrogen (as N)					
Total Nitrogen (as N)	0.2	mg/L	0.5	-	-

Client Sample ID			MW11	QC358	QC359
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			P17-Ap10835	P17-Ap10836	P17-Ap10837
Date Sampled			Apr 12, 2017	Apr 12, 2017	Apr 12, 2017
Test/Reference	LOR	Unit			
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-
Heavy Metals					
Aluminium	0.05	mg/L	3.8	-	-
Aluminium (filtered)	0.05	mg/L	4.7	< 0.05	< 0.05
Arsenic	0.001	mg/L	< 0.001	-	-
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	-	-
Chromium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	1.1	-	-
Iron (filtered)	0.05	mg/L	0.44	< 0.05	< 0.05
Lead	0.001	mg/L	0.002	-	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	-	-
Nickel (filtered)	0.001	mg/L	0.004	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Alkali Metals					
Calcium	0.5	mg/L	< 0.5	-	-
Magnesium	0.5	mg/L	11	-	-
Potassium	0.5	mg/L	< 0.5	-	-
Sodium	0.5	mg/L	48	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 13, 2017	14 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 13, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 13, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 13, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 13, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO4	Melbourne	Apr 13, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 13, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 13, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 13, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 13, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 13, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Apr 13, 2017	28 Day
Alkali Metals - Method: E022/E030 Unfiltered Cations in Water	Sydney	Apr 13, 2017	180 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Apr 13, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO3/NO2 Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 13, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Apr 13, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO2 Nitrite Nitrogen by FIA	Melbourne	Apr 13, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 12, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 13, 2017	7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	116			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	92			70-130	Pass		
Chloride	%	103			70-130	Pass		
Nitrate & Nitrite (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	95			70-130	Pass		
Nitrite (as N)	%	98			70-130	Pass		
Phosphate total (as P)	%	71			70-130	Pass		
Phosphorus reactive (as P)	%	103			70-130	Pass		
Sulphate (as SO ₄)	%	122			70-130	Pass		
Total Dissolved Solids	%	110			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	83			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO ₃)	%	91			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	95			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	81			70-130	Pass		
Arsenic	%	83			70-130	Pass		
Cadmium	%	88			70-130	Pass		
Chromium	%	87			70-130	Pass		
Copper	%	84			70-130	Pass		
Iron	%	84			70-130	Pass		
Lead	%	95			70-130	Pass		
Manganese	%	83			70-130	Pass		
Mercury	%	92			70-130	Pass		
Nickel	%	83			70-130	Pass		
Selenium	%	97			70-130	Pass		
Zinc	%	81			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	113			70-130	Pass		
Magnesium	%	115			70-130	Pass		
Potassium	%	103			70-130	Pass		
Sodium	%	106			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Chloride	M17-Ap12101	NCP	%	109		70-130	Pass	
Phosphate total (as P)	B17-Ap10112	NCP	%	72		70-130	Pass	
Phosphorus reactive (as P)	M17-Ap10923	NCP	%	105		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)								
				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	B17-Ap10111	NCP	%	72		70-130	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ap11506	NCP	%	86		70-130	Pass	
Total Alkalinity (as CaCO ₃)	B17-Ap10111	NCP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Sulphate (as SO ₄)	P17-Ap10828	CP	%	114		70-130	Pass	
Spike - % Recovery								
Heavy Metals								
				Result 1				
Aluminium	P17-Ap10828	CP	%	87		70-130	Pass	
Arsenic	P17-Ap10828	CP	%	93		70-130	Pass	
Cadmium	P17-Ap10828	CP	%	94		70-130	Pass	
Chromium	P17-Ap10828	CP	%	120		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	P17-Ap10828	CP	%	94			70-130	Pass	
Iron	P17-Ap10828	CP	%	99			70-130	Pass	
Lead	P17-Ap10828	CP	%	101			70-130	Pass	
Manganese	P17-Ap10828	CP	%	93			70-130	Pass	
Mercury	P17-Ap10828	CP	%	100			70-130	Pass	
Nickel	P17-Ap10828	CP	%	102			70-130	Pass	
Selenium	P17-Ap10828	CP	%	108			70-130	Pass	
Zinc	P17-Ap10828	CP	%	89			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	P17-Ap10828	CP	%	107			70-130	Pass	
Magnesium	P17-Ap10828	CP	%	112			70-130	Pass	
Potassium	P17-Ap10828	CP	%	96			70-130	Pass	
Sodium	P17-Ap10828	CP	%	101			70-130	Pass	
Spike - % Recovery									
				Result 1					
Total Kjeldahl Nitrogen (as N)	M17-Ap14314	NCP	%	90			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	P17-Ap10830	CP	%	93			70-130	Pass	
Nitrate & Nitrite (as N)	P17-Ap10830	CP	%	94			70-130	Pass	
Nitrate (as N)	P17-Ap10830	CP	%	94			70-130	Pass	
Nitrite (as N)	P17-Ap10830	CP	%	103			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	P17-Ap10827	CP	mg/L	50	42	16	30%	Pass	
Chloride	M17-Ap09993	NCP	mg/L	650	650	<1	30%	Pass	
Phosphorus reactive (as P)	B17-Ap10045	NCP	mg/L	1.7	1.8	2.8	30%	Pass	
Sulphate (as SO ₄)	M17-Ap11349	NCP	mg/L	< 5	5.4	11	30%	Pass	
Total Dissolved Solids	B17-Ap10657	NCP	mg/L	3200	3300	3.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	P17-Ap10827	CP	mg/L	0.65	0.62	5.0	30%	Pass	
Arsenic	M17-Ap14987	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	P17-Ap10827	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	P17-Ap10827	CP	mg/L	0.001	0.001	4.0	30%	Pass	
Copper	M17-Ap14987	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	P17-Ap10827	CP	mg/L	0.84	0.84	<1	30%	Pass	
Lead	P17-Ap10827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	P17-Ap10827	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Ap14987	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P17-Ap10827	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M17-Ap14862	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Zinc	P17-Ap10827	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	P17-Ap10827	CP	mg/L	2.8	2.8	<1	30%	Pass	
Magnesium	P17-Ap10827	CP	mg/L	4.6	4.6	1.0	30%	Pass	
Potassium	P17-Ap10827	CP	mg/L	1.9	1.9	<1	30%	Pass	
Sodium	P17-Ap10827	CP	mg/L	22	21	3.0	30%	Pass	

Duplicate				Result 1	Result 2	RPD		
Ammonia (as N)	P17-Ap10830	CP	mg/L	0.21	0.17	19	30%	Pass
Nitrate & Nitrite (as N)	P17-Ap10830	CP	mg/L	0.29	0.28	2.0	30%	Pass
Nitrate (as N)	P17-Ap10830	CP	mg/L	0.29	0.28	2.0	30%	Pass
Nitrite (as N)	P17-Ap10830	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phosphate total (as P)	P17-Ap10830	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Total Kjeldahl Nitrogen (as N)	P17-Ap10830	CP	mg/L	0.6	0.6	1.0	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Conductivity (at 25°C)	P17-Ap10832	CP	uS/cm	350	340	1.0	30%	Pass
pH	P17-Ap10832	CP	pH Units	4.9	4.9	pass	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	P17-Ap10832	CP	mg/L	< 20	< 20	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	P17-Ap10832	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	P17-Ap10832	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	P17-Ap10832	CP	mg/L	< 20	< 20	<1	30%	Pass
Duplicate				Result 1	Result 2	RPD		
Alkali Metals				Result 1	Result 2	RPD		
Calcium	P17-Ap10833	CP	mg/L	8.4	8.5	1.0	30%	Pass
Magnesium	P17-Ap10833	CP	mg/L	3.7	3.8	2.0	30%	Pass
Sodium	P17-Ap10833	CP	mg/L	27	28	2.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 18, 2017 4:01 PM**
Eurofins | mgt reference: **542675**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QC361 not received, QC362 labeled as 262.

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Company Name:	Coffey Environments Pty Ltd WA	Order No.:		Received:	Apr 18, 2017 4:01 PM
Address:	Suite 2, 53 Burswood Road Burswood WA 6100	Report #:	542675	Due:	Apr 26, 2017
Project Name:	NL_BASELINE GW_SW MONITORING LABORATORY	Phone:	08 9355 7100	Priority:	5 Day
Project ID:	ENAUPERT04483AA	Fax:	08 9470 8601	Contact Name:	Richelle Bunbury

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Acidity (as CaCO3)	Aluminium	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	CANCELLED	Chromium	Chromium (filtered)	Conductivity (at 25°C)	Copper	Copper (filtered)	Iron	Iron (filtered)	Lead	Lead (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)	pH	Phosphate total (as P)	Phosphorus reactive (as P)	Selenium	Selenium (filtered)	Total Dissolved Solids	Zinc	Zinc (filtered)	Alkalinity (speciated)	Eurofins mgt Suite B11	Nitrogens (speciated)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X							X			X												X	X	X							X	X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X				X	X									
Brisbane Laboratory - NATA Site # 20794																																										
Perth Laboratory - NATA Site # 18217																																										
10	MW31	Apr 13, 2017		Water	M17-Ap13843	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW32	Apr 13, 2017		Water	M17-Ap13844	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW33	Apr 13, 2017		Water	M17-Ap13845	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	MW34	Apr 13, 2017		Water	M17-Ap13846	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	MW35	Apr 13, 2017		Water	M17-Ap13847	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	QC360	Apr 13, 2017		Water	M17-Ap13848	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	QC361	Apr 13, 2017		Water	M17-Ap13849									X																												
17	QC262	Apr 13, 2017		Water	M17-Ap13850			X		X	X			X			X		X		X		X		X		X					X			X							
Test Counts						15	15	16	15	16	15	16	1	15	16	15	15	16	15	16	15	16	15	16	15	16	15	16	15	15	15	16	15	15	16	15	16	15	15	15	15	

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **542675-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA
Received Date Apr 18, 2017

Client Sample ID			MW22 Water	MW21 Water	MW20 Water	MW19 Water
Sample Matrix						
Eurofins mgt Sample No.			M17-Ap13834	M17-Ap13835	M17-Ap13836	M17-Ap13837
Date Sampled			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	65	84	92	370
Ammonia (as N)	0.01	mg/L	0.14	0.09	0.06	0.30
Chloride	1	mg/L	63	61	53	140
Conductivity (at 25°C)	1	uS/cm	510	520	390	1000
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	2.1	0.09	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	2.0	0.09	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	1.7	0.4	1.5
pH	0.1	pH Units	3.8	4.2	4.2	3.4
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.12
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	61	78	49	150
Total Dissolved Solids	10	mg/L	240	280	220	520
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.8	0.5	1.8
Total Nitrogen (as N)	0.2	mg/L	0.5	3.9	0.6	1.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.7	3.6	7.3	21
Aluminium (filtered)	0.05	mg/L	1.7	4.2	7.3	18
Arsenic	0.001	mg/L	^{R05} < 0.001	< 0.001	^{R05} 0.003	0.001
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.004	0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.002	0.001	0.005
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	0.001	0.005
Copper	0.001	mg/L	^{R05} 0.001	^{R05} < 0.001	^{R05} < 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.001	0.001	< 0.001
Iron	0.05	mg/L	2.0	^{R05} 1.1	0.42	0.11
Iron (filtered)	0.05	mg/L	0.78	1.2	0.40	0.08
Lead	0.001	mg/L	0.001	< 0.001	0.002	0.004
Lead (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.003

Client Sample ID			MW22 Water	MW21 Water	MW20 Water	MW19 Water
Sample Matrix			M17-Ap13834	M17-Ap13835	M17-Ap13836	M17-Ap13837
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.005	0.003	0.005	0.011
Nickel (filtered)	0.001	mg/L	0.005	0.003	0.005	0.011
Selenium	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	0.010	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	8.6	2.5	< 0.5	0.8
Magnesium	0.5	mg/L	5.9	4.5	2.4	4.8
Potassium	0.5	mg/L	1.9	6.9	1.0	0.5
Sodium	0.5	mg/L	34	38	30	66

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW29 Water
Sample Matrix			M17-Ap13838	M17-Ap13839	M17-Ap13840	M17-Ap13841
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	45	75	90	59
Ammonia (as N)	0.01	mg/L	0.09	0.04	0.04	0.14
Chloride	1	mg/L	77	29	56	19
Conductivity (at 25°C)	1	uS/cm	380	310	430	180
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	0.47	< 0.05
Nitrate (as N)	0.02	mg/L	0.03	0.02	0.47	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.4	0.4	0.5	1.3
pH	0.1	pH Units	4.5	4.0	4.1	4.5
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.07
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (as SO ₄)	5	mg/L	27	44	54	22
Total Dissolved Solids	10	mg/L	220	200	250	^{Q19} 290
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.4	0.5	1.4
Total Nitrogen (as N)	0.2	mg/L	0.5	0.4	1.0	1.4
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	37
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20	37
Heavy Metals						
Aluminium	0.05	mg/L	1.2	2.5	4.8	1.8
Aluminium (filtered)	0.05	mg/L	1.0	2.5	4.7	1.6
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			MW18 Water	MW17 Water	MW16 Water	MW29 Water
Sample Matrix			M17-Ap13838	M17-Ap13839	M17-Ap13840	M17-Ap13841
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.002	0.003	0.003	0.003
Chromium (filtered)	0.001	mg/L	< 0.001	0.003	0.003	0.002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Iron	0.05	mg/L	1.2	1.5	1.0	0.18
Iron (filtered)	0.05	mg/L	0.16	0.88	0.51	0.18
Lead	0.001	mg/L	0.002	0.008	0.002	< 0.001
Lead (filtered)	0.001	mg/L	0.002	0.006	0.002	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	^{RO5} 0.001	< 0.001	0.002	< 0.001
Nickel (filtered)	0.001	mg/L	0.002	< 0.001	0.002	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	2.9	3.0	4.0	3.2
Magnesium	0.5	mg/L	4.7	2.7	4.5	4.6
Potassium	0.5	mg/L	1.7	1.0	1.0	1.4
Sodium	0.5	mg/L	43	22	32	14

Client Sample ID			MW30 Water	MW31 Water	MW32 Water	MW33 Water
Sample Matrix			M17-Ap13842	M17-Ap13843	M17-Ap13844	M17-Ap13845
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO3)	10	mg/L	22	51	45	17
Ammonia (as N)	0.01	mg/L	0.02	0.23	3.1	0.33
Chloride	1	mg/L	28	67	92	67
Conductivity (at 25°C)	1	uS/cm	220	390	490	430
Nitrate & Nitrite (as N)	0.05	mg/L	2.2	0.39	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	2.2	0.39	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Organic Nitrogen (as N)	0.2	mg/L	0.5	1.3	2.6	0.7
pH	0.1	pH Units	6.4	5.1	5.6	6.9
Phosphate total (as P)	0.05	mg/L	0.05	0.76	0.39	0.13
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.75	0.35	0.07
Sulphate (as SO4)	5	mg/L	12	24	12	< 5
Total Dissolved Solids	10	mg/L	170	300	320	310
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	1.5	5.7	1.0
Total Nitrogen (as N)	0.2	mg/L	2.7	1.9	5.7	1.0

Client Sample ID			MW30 Water	MW31 Water	MW32 Water	MW33 Water
Sample Matrix			M17-Ap13842	M17-Ap13843	M17-Ap13844	M17-Ap13845
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	27	72
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	27	72
Heavy Metals						
Aluminium	0.05	mg/L	0.44	0.79	0.24	0.24
Aluminium (filtered)	0.05	mg/L	0.40	0.66	0.23	0.20
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	0.002	0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	^{R05} < 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.001	0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.07	0.31	^{R05} 0.25	0.14
Iron (filtered)	0.05	mg/L	0.05	0.23	0.26	0.09
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	^{R05} < 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	12	5.5	5.5	24
Magnesium	0.5	mg/L	1.8	5.6	5.6	5.6
Potassium	0.5	mg/L	0.7	7.0	6.7	2.8
Sodium	0.5	mg/L	17	36	47	32

Client Sample ID			MW34 Water	MW35 Water	QC360 Water	QC262 Water
Sample Matrix			M17-Ap13846	M17-Ap13847	M17-Ap13848	M17-Ap13850
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	66	100	38	-
Ammonia (as N)	0.01	mg/L	0.18	0.29	0.09	-
Chloride	1	mg/L	57	42	81	-
Conductivity (at 25°C)	1	uS/cm	330	220	420	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	-

Client Sample ID			MW34 Water	MW35 Water	QC360 Water	QC262 Water
Sample Matrix			M17-Ap13846	M17-Ap13847	M17-Ap13848	M17-Ap13850
Eurofins mgt Sample No.			Apr 13, 2017	Apr 13, 2017	Apr 13, 2017	Apr 13, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Organic Nitrogen (as N)	0.2	mg/L	4.1	4.4	0.4	-
pH	0.1	pH Units	6.8	4.4	4.5	-
Phosphate total (as P)	0.05	mg/L	1.4	0.70	< 0.05	-
Phosphorus reactive (as P)	0.05	mg/L	1.2	0.66	< 0.05	-
Sulphate (as SO4)	5	mg/L	< 50	26	29	-
Total Dissolved Solids	10	mg/L	^{Q19} 440	^{Q19} 420	230	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	4.3	4.7	0.5	-
Total Nitrogen (as N)	0.2	mg/L	4.3	4.7	0.5	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	110	< 20	< 20	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Total Alkalinity (as CaCO3)	20	mg/L	110	< 20	< 20	-
Heavy Metals						
Aluminium	0.05	mg/L	0.42	0.50	2.1	-
Aluminium (filtered)	0.05	mg/L	0.38	0.47	0.65	< 0.05
Arsenic	0.001	mg/L	0.002	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.003	-
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	0.002	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Iron	0.05	mg/L	1.7	^{R05} 0.16	1.6	-
Iron (filtered)	0.05	mg/L	1.4	0.21	0.20	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	0.003	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.002	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	24	8.4	3.1	-
Magnesium	0.5	mg/L	7.2	2.4	5.1	-
Potassium	0.5	mg/L	10	10	1.8	-
Sodium	0.5	mg/L	25	15	42	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 24, 2017	14 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 19, 2017	28 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 19, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 19, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Apr 20, 2017	2 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 19, 2017	7 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 19, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 18, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 18, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Apr 18, 2017	28 Day
Nitrogens (speciated)			
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 19, 2017	28 Day
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 19, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 19, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 19, 2017	2 Day
Organic Nitrogen (as N) - Method: APHA 4500 Organic Nitrogen (N)	Melbourne	Apr 18, 2017	7 Day
Total Kjeldahl Nitrogen (as N) - Method: APHA 4500 TKN	Melbourne	Apr 19, 2017	7 Day
Eurofins mgt Suite B11			
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 19, 2017	28 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 19, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 19, 2017	180 Day

Company Name: Coffey Environments Pty Ltd WA	Order No.:	Received: Apr 18, 2017 4:01 PM
Address: Suite 2, 53 Burswood Road Burswood WA 6100	Report #: 542675	Due: Apr 26, 2017
	Phone: 08 9355 7100	Priority: 5 Day
	Fax: 08 9470 8601	Contact Name: Richelle Bunbury
Project Name: NL_BASELINE GW_SW MONITORING LABORATORY		
Project ID: ENAUPERT04483AA		

Eurofins | mgt Analytical Services Manager : Natalie Krasselt

Sample Detail						Nitrogens (speciated)	Eurofins mgt Suite B11	Alkalinity (speciated)	Zinc (filtered)	Zinc	Total Dissolved Solids	Selenium (filtered)	Selenium	Phosphorus reactive (as P)	Phosphate total (as P)	pH	Nickel (filtered)	Nickel	Mercury (filtered)	Mercury	Manganese (filtered)	Manganese	Lead (filtered)	Lead	Iron (filtered)	Iron	Copper (filtered)	Copper	Conductivity (at 25°C)	Chromium (filtered)	Chromium	CANCELLED	Cadmium (filtered)	Cadmium	Arsenic (filtered)	Arsenic	Aluminium (filtered)	Aluminium	Acidity (as CaCO3)			
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Brisbane Laboratory - NATA Site # 20794																																										
Perth Laboratory - NATA Site # 18217																																										
10	MW31	Apr 13, 2017		Water	M17-Ap13843	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
11	MW32	Apr 13, 2017		Water	M17-Ap13844	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
12	MW33	Apr 13, 2017		Water	M17-Ap13845	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13	MW34	Apr 13, 2017		Water	M17-Ap13846	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14	MW35	Apr 13, 2017		Water	M17-Ap13847	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15	QC360	Apr 13, 2017		Water	M17-Ap13848	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
16	QC361	Apr 13, 2017		Water	M17-Ap13849																																					
17	QC262	Apr 13, 2017		Water	M17-Ap13850																																					
Test Counts						15	15	16	15	16	15	16	1	15	16	15	15	16	15	16	15	16	15	16	15	16	15	16	15	16	15	15	16	15	16	15	16	15	16	15	15	

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Acidity (as CaCO ₃)	%	122			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Ammonia (as N)	%	92			70-130	Pass		
Chloride	%	104			70-130	Pass		
Nitrate & Nitrite (as N)	%	95			70-130	Pass		
Nitrate (as N)	%	95			70-130	Pass		
Nitrite (as N)	%	104			70-130	Pass		
Phosphate total (as P)	%	96			70-130	Pass		
Phosphorus reactive (as P)	%	111			70-130	Pass		
Sulphate (as SO4)	%	117			70-130	Pass		
Total Dissolved Solids	%	114			70-130	Pass		
Total Kjeldahl Nitrogen (as N)	%	124			70-130	Pass		
LCS - % Recovery								
Alkalinity (speciated)								
Carbonate Alkalinity (as CaCO3)	%	79			70-130	Pass		
Total Alkalinity (as CaCO3)	%	83			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	75			70-130	Pass		
Aluminium (filtered)	%	88			70-130	Pass		
Arsenic	%	83			70-130	Pass		
Arsenic (filtered)	%	98			70-130	Pass		
Cadmium	%	96			70-130	Pass		
Cadmium (filtered)	%	97			70-130	Pass		
Chromium	%	86			70-130	Pass		
Chromium (filtered)	%	102			70-130	Pass		
Copper	%	85			70-130	Pass		
Copper (filtered)	%	105			70-130	Pass		
Iron	%	81			70-130	Pass		
Iron (filtered)	%	99			70-130	Pass		
Lead	%	105			70-130	Pass		
Lead (filtered)	%	108			70-130	Pass		
Manganese	%	82			70-130	Pass		
Manganese (filtered)	%	97			70-130	Pass		
Mercury	%	100			70-130	Pass		
Mercury (filtered)	%	97			70-130	Pass		
Nickel	%	82			70-130	Pass		
Nickel (filtered)	%	101			70-130	Pass		
Selenium	%	99			70-130	Pass		
Selenium (filtered)	%	108			70-130	Pass		
Zinc	%	83			70-130	Pass		
Zinc (filtered)	%	96			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	88			70-130	Pass		
Magnesium	%	99			70-130	Pass		
Potassium	%	82			70-130	Pass		
Sodium	%	94			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ap12116	NCP	%	91		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ap14067	NCP	%	92		70-130	Pass	
Nitrate (as N)	M17-Ap14067	NCP	%	91		70-130	Pass	
Nitrite (as N)	M17-Ap12116	NCP	%	103		70-130	Pass	
Phosphate total (as P)	B17-Ap11835	NCP	%	87		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sulphate (as SO ₄)	M17-Ap14277	NCP	%	113			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	B17-Ap11835	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO ₃)	M17-Ap13930	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	M17-Ap13834	CP	%	80			70-130	Pass	
Aluminium (filtered)	S17-Ap11112	NCP	%	118			70-130	Pass	
Arsenic	M17-Ap13834	CP	%	95			70-130	Pass	
Cadmium	M17-Ap13834	CP	%	97			70-130	Pass	
Chromium	M17-Ap13834	CP	%	97			70-130	Pass	
Copper	M17-Ap13834	CP	%	95			70-130	Pass	
Iron	M17-Ap13834	CP	%	95			70-130	Pass	
Iron (filtered)	M17-Ap14853	NCP	%	70			70-130	Pass	
Lead	M17-Ap13834	CP	%	105			70-130	Pass	
Lead (filtered)	M17-Ap14853	NCP	%	88			70-130	Pass	
Manganese	M17-Ap13834	CP	%	91			70-130	Pass	
Mercury	M17-Ap13834	CP	%	100			70-130	Pass	
Nickel	M17-Ap13834	CP	%	93			70-130	Pass	
Selenium	M17-Ap13834	CP	%	106			70-130	Pass	
Selenium (filtered)	S17-Ap11112	NCP	%	113			70-130	Pass	
Zinc	M17-Ap13834	CP	%	90			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M17-Ap13835	CP	%	124			70-130	Pass	
Cadmium (filtered)	M17-Ap13835	CP	%	122			70-130	Pass	
Chromium (filtered)	M17-Ap13835	CP	%	127			70-130	Pass	
Copper (filtered)	M17-Ap13835	CP	%	126			70-130	Pass	
Manganese (filtered)	M17-Ap13835	CP	%	120			70-130	Pass	
Mercury (filtered)	M17-Ap13835	CP	%	106			70-130	Pass	
Nickel (filtered)	M17-Ap13835	CP	%	123			70-130	Pass	
Zinc (filtered)	M17-Ap13835	CP	%	124			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ap13843	CP	%	95			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ap13843	CP	%	102			70-130	Pass	
Magnesium	M17-Ap13843	CP	%	105			70-130	Pass	
Potassium	M17-Ap13843	CP	%	100			70-130	Pass	
Sodium	M17-Ap13843	CP	%	95			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Total Alkalinity (as CaCO ₃)	M17-Ap13845	CP	%	119			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Acidity (as CaCO ₃)	B17-Ap17929	NCP	mg/L	290	270	9.0	30%	Pass	
Ammonia (as N)	M17-Ap12116	NCP	mg/L	0.02	0.02	7.0	30%	Pass	
Chloride	B17-Ap11838	NCP	mg/L	98	98	<1	30%	Pass	
Conductivity (at 25°C)	M17-Ap13834	CP	uS/cm	510	520	2.0	30%	Pass	
Nitrate & Nitrite (as N)	M17-Ap13965	NCP	mg/L	0.11	0.11	2.0	30%	Pass	
Nitrate (as N)	M17-Ap13965	NCP	mg/L	0.11	0.11	2.0	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Nitrite (as N)	M17-Ap12116	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH	M17-Ap13834	CP	pH Units	3.8	3.8	pass	30%	Pass	
Phosphate total (as P)	M17-Ap13624	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (as SO ₄)	M17-Ap14405	NCP	mg/L	300	300	<1	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ap13834	CP	mg/L	< 20	< 20	<1	30%	Pass	
Carbonate Alkalinity (as CaCO ₃)	M17-Ap13834	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO ₃)	M17-Ap13834	CP	mg/L	< 10	< 10	<1	30%	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ap13834	CP	mg/L	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M17-Ap13834	CP	mg/L	1.7	1.7	<1	30%	Pass	
Chromium (filtered)	M17-Ap13834	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M17-Ap13834	CP	mg/L	0.002	0.002	6.0	30%	Pass	
Iron (filtered)	M17-Ap13834	CP	mg/L	0.78	0.81	5.0	30%	Pass	
Lead (filtered)	M17-Ap13834	CP	mg/L	0.001	0.001	3.0	30%	Pass	
Manganese (filtered)	M17-Ap13834	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury (filtered)	S17-Ap11111	NCP	mg/L	0.0002	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M17-Ap13834	CP	mg/L	0.005	0.005	<1	30%	Pass	
Selenium	M17-Ap14862	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Selenium (filtered)	M17-Ap14861	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M17-Ap14862	NCP	mg/L	0.036	0.039	7.0	30%	Pass	
Zinc (filtered)	M17-Ap13834	CP	mg/L	0.010	0.010	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	M17-Ap13837	CP	mg/L	18	18	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphorus reactive (as P)	M17-Ap13839	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	M17-Ap13843	CP	mg/L	0.79	0.72	8.0	30%	Pass	
Arsenic	M17-Ap13843	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M17-Ap13843	CP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chromium	M17-Ap13843	CP	mg/L	0.002	0.002	<1	30%	Pass	
Copper	M17-Ap13843	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	M17-Ap13843	CP	mg/L	0.31	0.28	9.0	30%	Pass	
Lead	M17-Ap13843	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese	M17-Ap13843	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Mercury	M17-Ap13843	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M17-Ap13843	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M17-Ap13843	CP	mg/L	5.5	5.5	1.0	30%	Pass	
Magnesium	M17-Ap13843	CP	mg/L	5.6	5.6	<1	30%	Pass	
Potassium	M17-Ap13843	CP	mg/L	7.0	7.1	2.0	30%	Pass	
Sodium	M17-Ap13843	CP	mg/L	36	37	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25°C)	M17-Ap13844	CP	uS/cm	490	490	1.0	30%	Pass	
pH	M17-Ap13844	CP	pH Units	5.6	5.5	pass	30%	Pass	

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ap13844	CP	mg/L	27	22	17	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ap13844	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ap13844	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ap13844	CP	mg/L	27	22	17	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-Ap13844	CP	mg/L	0.23	0.23	<1	30%	Pass
Arsenic (filtered)	M17-Ap13844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium (filtered)	M17-Ap13844	CP	mg/L	< 0.00005	0.00005	<1	30%	Pass
Chromium (filtered)	M17-Ap13844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M17-Ap13844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron (filtered)	M17-Ap13844	CP	mg/L	0.26	0.24	6.0	30%	Pass
Lead (filtered)	M17-Ap13844	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M17-Ap13844	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ap13845	CP	mg/L	0.07	0.07	2.4	30%	Pass
Total Dissolved Solids	M17-Ap13845	CP	mg/L	310	320	4.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.
R05	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: **Coffey Environments Pty Ltd WA**
Contact name: **Richelle Bunbury**
Project name: **NL_BASELINE GW_SW MONITORING LABORATORY**
Project ID: **ENAUPERT04483AA**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Apr 18, 2017 3:16 PM**
Eurofins | mgt reference: **542831**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
 - All samples have been received as described on the above COC.
 - COC has been completed correctly.
 - Attempt to chill was evident.
 - Appropriately preserved sample containers have been used.
 - All samples were received in good condition.
 - Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
 - Appropriate sample containers have been used.
 - Sample containers for volatile analysis received with zero headspace.
 - Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Natalie Krasselt on Phone : (+61) (3) 8564 5000 or by e.mail: NatalieKrasselt@eurofins.com

Results will be delivered electronically via e.mail to Richelle Bunbury - richelle_bunbury@coffey.com.

Certificate of Analysis

Coffey Environments Pty Ltd WA
Suite 2, 53 Burswood Road
Burswood
WA 6100



NATA Accredited
Accreditation Number 1261
Site Number 1254 & 14271

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: **Richelle Bunbury**

Report **542831-W**
Project name NL_BASELINE GW_SW MONITORING LABORATORY
Project ID ENAUPERT04483AA
Received Date Apr 18, 2017

Client Sample ID			MW55 Water	MW44 Water	MW42 Water	MW41 Water
Sample Matrix			M17-Ap14976	M17-Ap14977	M17-Ap14978	M17-Ap14979
Eurofins mgt Sample No.			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	-
Toluene	0.001	mg/L	< 0.001	-	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-	-
Xylenes - Total	0.003	mg/L	< 0.003	-	-	-
4-Bromofluorobenzene (surr.)	1	%	102	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	-	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	0.05	mg/L	< 0.05	-	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	-
Acidity & Ammonia						
Acidity (as CaCO3)	10	mg/L	71	22	46	110
Ammonia (as N)	0.01	mg/L	< 0.01	0.44	0.27	0.60
Chloride						
Chloride	1	mg/L	75	350	51	200
Conductivity						
Conductivity (at 25°C)	1	uS/cm	1100	1800	240	960
Nitrate & Nitrite						
Nitrate & Nitrite (as N)	0.05	mg/L	3.7	< 0.05	< 0.05	0.44
Nitrate (as N)	0.02	mg/L	3.6	< 0.02	< 0.02	0.39
Nitrite (as N)	0.02	mg/L	0.17	< 0.02	< 0.02	0.05
pH						
pH	0.1	pH Units	6.5	7.3	4.3	3.5
Phosphate						
Phosphate total (as P)	0.05	mg/L	< 0.05	0.23	< 0.05	0.47
Phosphorus reactive (as P)	0.05	mg/L	< 0.05	0.29	< 0.05	0.50
Sulphate						
Sulphate (as SO4)	5	mg/L	220	48	6.6	18
Total Dissolved Solids						
Total Dissolved Solids	10	mg/L	640	990	210	690

Client Sample ID			MW55 Water	MW44 Water	MW42 Water	MW41 Water
Sample Matrix			M17-Ap14976	M17-Ap14977	M17-Ap14978	M17-Ap14979
Eurofins mgt Sample No.			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.8	1.8	1.1	3.1
Total Nitrogen (as N)	0.2	mg/L	4.5	1.8	1.1	3.5
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	92	180	< 20	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	92	180	< 20	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.16	2.8	0.31	1.0
Aluminium (filtered)	0.05	mg/L	0.16	0.11	0.29	0.96
Arsenic	0.001	mg/L	< 0.001	0.006	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.004	0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	0.00012
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	0.011	< 0.001	0.002
Chromium (filtered)	0.001	mg/L	< 0.001	0.005	< 0.001	0.001
Copper	0.001	mg/L	< 0.001	0.003	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	1.4	0.17	0.67
Iron (filtered)	0.05	mg/L	0.05	0.35	0.12	0.52
Lead	0.001	mg/L	0.002	0.007	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	0.003	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	0.009	0.002	0.001
Selenium (filtered)	0.001	mg/L	0.002	0.003	0.006	0.002
Zinc	0.005	mg/L	0.009	0.012	0.007	0.008
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.008
Alkali Metals						
Calcium	0.5	mg/L	80	16	1.4	7.8
Magnesium	0.5	mg/L	15	26	4.4	15
Potassium	0.5	mg/L	16	6.6	0.9	2.9
Sodium	0.5	mg/L	59	210	26	81

Client Sample ID			MW40 Water	MW39 Water	MW38 Water	MW37 Water
Sample Matrix			M17-Ap14980	M17-Ap14981	M17-Ap14982	M17-Ap14983
Eurofins mgt Sample No.			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Date Sampled						
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	59	40	79	32
Ammonia (as N)	0.01	mg/L	0.43	0.98	0.63	0.25
Chloride	1	mg/L	95	110	120	19
Conductivity (at 25°C)	1	uS/cm	400	690	690	140
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.48	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.38	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.10	< 0.02	0.02
pH	0.1	pH Units	5.1	6.7	6.2	5.7
Phosphate total (as P)	0.05	mg/L	< 0.05	1.3	1.1	0.30
Phosphorus reactive (as P)	0.05	mg/L	0.24	1.4	1.0	0.31
Sulphate (as SO ₄)	5	mg/L	8.2	32	15	5.1
Total Dissolved Solids	10	mg/L	320	400	410	120
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.3	2.1	1.9	0.8
Total Nitrogen (as N)	0.2	mg/L	1.3	2.6	1.9	0.8
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	65	49	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	65	49	< 20
Heavy Metals						
Aluminium	0.05	mg/L	1.2	0.11	0.36	0.21
Aluminium (filtered)	0.05	mg/L	1.2	0.11	0.33	0.17
Arsenic	0.001	mg/L	< 0.001	0.004	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	0.003	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.34	0.18	0.25	0.06
Iron (filtered)	0.05	mg/L	0.28	0.12	0.19	< 0.05
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	0.019	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	0.017	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.020	< 0.005	0.017	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.008	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	2.4	24	16	6.0
Magnesium	0.5	mg/L	7.6	12	9.4	2.1
Potassium	0.5	mg/L	3.8	19	15	1.6
Sodium	0.5	mg/L	42	42	55	10

Client Sample ID			MW36	QC369	QC370	SWL15-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14984	M17-Ap14985	M17-Ap14986	M17-Ap14987
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	19	-	-	31
Ammonia (as N)	0.01	mg/L	0.03	-	-	< 0.01
Chloride	1	mg/L	10	-	-	78
Conductivity (at 25°C)	1	uS/cm	110	-	-	400
Nitrate & Nitrite (as N)	0.05	mg/L	1.4	-	-	< 0.05
Nitrate (as N)	0.02	mg/L	1.3	-	-	< 0.02
Nitrite (as N)	0.02	mg/L	0.03	-	-	< 0.02
pH	0.1	pH Units	6.4	-	-	4.8
Phosphate total (as P)	0.05	mg/L	0.11	-	-	0.24
Phosphorus reactive (as P)	0.05	mg/L	0.12	-	-	0.43
Sulphate (as SO ₄)	5	mg/L	< 5	-	-	8.4
Total Dissolved Solids	10	mg/L	^{Q19} 140	-	-	330
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	-	-	1.1
Total Nitrogen (as N)	0.2	mg/L	2.0	-	-	1.1
Turbidity	1	NTU	-	-	-	1.3
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-	< 20
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	-	-	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	-	-	< 20
Heavy Metals						
Aluminium	0.05	mg/L	0.07	-	-	0.52
Aluminium (filtered)	0.05	mg/L	0.07	< 0.05	< 0.05	0.58
Arsenic	0.001	mg/L	< 0.001	-	-	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	-	-	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	< 0.001	-	-	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	-	-	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	< 0.05	-	-	0.27
Iron (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.23
Lead	0.001	mg/L	< 0.001	-	-	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	-	-	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	-	-	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	-	-	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	-	-	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	8.5	-	-	4.1
Magnesium	0.5	mg/L	1.5	-	-	6.5
Potassium	0.5	mg/L	0.9	-	-	3.3
Sodium	0.5	mg/L	4.8	-	-	40

Client Sample ID			MW36	QC369	QC370	SWL15-1
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14984	M17-Ap14985	M17-Ap14986	M17-Ap14987
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit				
Pathogens						
E.coli	1	MPN/100mL	-	-	-	110
Thermotolerant Coliforms	1	cfu/100mL	-	-	-	120

Client Sample ID			SWL15-2	SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14988	M17-Ap14989	M17-Ap14990	M17-Ap14991
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit				
Acidity (as CaCO ₃)	10	mg/L	39	< 10	< 10	34
Ammonia (as N)	0.01	mg/L	< 0.01	0.02	0.01	0.04
Chloride	1	mg/L	79	51	52	160
Conductivity (at 25°C)	1	uS/cm	400	410	430	920
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.07	0.09	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.06	0.07	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH	0.1	pH Units	4.7	7.4	7.4	6.8
Phosphate total (as P)	0.05	mg/L	0.29	0.39	0.49	1.9
Phosphorus reactive (as P)	0.05	mg/L	0.42	0.32	0.39	1.3
Sulphate (as SO ₄)	5	mg/L	8.8	19	19	34
Total Dissolved Solids	10	mg/L	310	240	230	550
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.6	0.6	2.2
Total Nitrogen (as N)	0.2	mg/L	1.2	0.7	0.7	2.2
Turbidity	1	NTU	16	5.6	4.3	59
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	51	49	59
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10	< 10
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	51	49	59
Heavy Metals						
Aluminium	0.05	mg/L	0.79	0.07	0.06	0.72
Aluminium (filtered)	0.05	mg/L	0.57	< 0.05	0.06	0.24
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Chromium	0.001	mg/L	0.001	< 0.001	< 0.001	0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.54	0.28	0.23	0.63
Iron (filtered)	0.05	mg/L	0.23	0.13	0.15	0.17
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	0.007	< 0.005	< 0.005	0.010
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001

Client Sample ID			SWL15-2	SWL16-1	SWL16-2	SWL16-3
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14988	M17-Ap14989	M17-Ap14990	M17-Ap14991
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	0.009	< 0.005	< 0.005	0.005
Zinc (filtered)	0.005	mg/L	0.018	< 0.005	0.007	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	3.9	19	17	24
Magnesium	0.5	mg/L	6.6	5.6	5.2	15
Potassium	0.5	mg/L	3.4	9.6	9.9	20
Sodium	0.5	mg/L	40	28	29	72
Pathogens						
E.coli	1	MPN/100mL	97	1200	340	31
Thermotolerant Coliforms	1	cfu/100mL	480	3300	1500	74

Client Sample ID			M15 SWL17-1	M15 SWL17-2	M15 SWL17-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14992	M17-Ap14993	M17-Ap14994
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit			
Acidity (as CaCO₃)					
Acidity (as CaCO ₃)	10	mg/L	50	52	54
Ammonia (as N)					
Ammonia (as N)	0.01	mg/L	0.04	0.05	0.04
Chloride					
Chloride	1	mg/L	65	66	66
Conductivity (at 25°C)					
Conductivity (at 25°C)	1	uS/cm	320	380	370
Nitrate & Nitrite (as N)					
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Nitrite (as N)					
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
pH					
pH	0.1	pH Units	3.9	3.9	4.0
Phosphate total (as P)					
Phosphate total (as P)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Phosphorus reactive (as P)					
Phosphorus reactive (as P)	0.05	mg/L	0.08	0.07	0.07
Sulphate (as SO₄)					
Sulphate (as SO ₄)	5	mg/L	12	12	13
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	290	300	310
Total Kjeldahl Nitrogen (as N)					
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.9	0.9	0.8
Total Nitrogen (as N)					
Total Nitrogen (as N)	0.2	mg/L	0.9	0.9	0.8
Turbidity					
Turbidity	1	NTU	2.8	8.3	13
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO₃)					
Bicarbonate Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20
Carbonate Alkalinity (as CaCO₃)					
Carbonate Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO₃)					
Hydroxide Alkalinity (as CaCO ₃)	10	mg/L	< 10	< 10	< 10
Total Alkalinity (as CaCO₃)					
Total Alkalinity (as CaCO ₃)	20	mg/L	< 20	< 20	< 20
Heavy Metals					
Aluminium					
Aluminium	0.05	mg/L	0.42	0.41	0.42
Aluminium (filtered)					
Aluminium (filtered)	0.05	mg/L	0.41	0.40	0.39
Arsenic					
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Arsenic (filtered)					
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium					
Cadmium	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005
Cadmium (filtered)					
Cadmium (filtered)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005

Client Sample ID			M15 SWL17-1	M15 SWL17-2	M15 SWL17-3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			M17-Ap14992	M17-Ap14993	M17-Ap14994
Date Sampled			Apr 18, 2017	Apr 18, 2017	Apr 18, 2017
Test/Reference	LOR	Unit			
Heavy Metals					
Chromium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Iron	0.05	mg/L	0.21	0.21	0.20
Iron (filtered)	0.05	mg/L	0.18	0.15	0.15
Lead	0.001	mg/L	< 0.001	0.003	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.007
Alkali Metals					
Calcium	0.5	mg/L	1.8	1.8	1.8
Magnesium	0.5	mg/L	6.7	6.6	6.6
Potassium	0.5	mg/L	1.3	1.3	1.4
Sodium	0.5	mg/L	34	33	33
Pathogens					
E.coli	1	MPN/100mL	<10	<10	<10
Thermotolerant Coliforms	1	cfu/100mL	<10	<10	<10

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Melbourne	Apr 22, 2017	7 Day
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 20, 2017	14 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 20, 2017	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Melbourne	Apr 22, 2017	7 Day
Acidity (as CaCO ₃) - Method: LTM-INO-4210 Acidity	Melbourne	Apr 20, 2017	14 Day
Ammonia (as N) - Method: APHA 4500-NH ₃ Ammonia Nitrogen by FIA	Melbourne	Apr 20, 2017	28 Day
Chloride - Method: LTM-INO-4090 Chloride by Discrete Analyser	Melbourne	Apr 20, 2017	28 Day
Conductivity (at 25°C) - Method: LTM-INO-4030	Melbourne	Apr 20, 2017	28 Day
Nitrate (as N) - Method: APHA 4500-NO ₃ Nitrate Nitrogen by FIA	Melbourne	Apr 20, 2017	7 Day
Nitrite (as N) - Method: APHA 4500-NO ₂ Nitrite Nitrogen by FIA	Melbourne	Apr 20, 2017	2 Day
pH - Method: LTM-GEN-7090 pH in water by ISE	Melbourne	Apr 20, 2017	0 Hours
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Apr 20, 2017	28 Day
Phosphorus reactive (as P) - Method: APHA4500-PO ₄	Melbourne	Apr 20, 2017	2 Day
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Apr 20, 2017	28 Day
Total Dissolved Solids - Method: LM-LTM-INO-4110 (Total Dissolved Solids @ 178°C - 182°C)	Melbourne	Apr 20, 2017	7 Day
Turbidity - Method: LTM-INO-4140 'Turbidity by Nephelometric Method'	Melbourne	Apr 19, 2017	2 Day
Alkalinity (speciated) - Method: APHA 2320 Alkalinity by Titration	Melbourne	Apr 20, 2017	14 Day
Heavy Metals - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 20, 2017	180 Day
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Apr 20, 2017	180 Day
Mercury (filtered) - Method: LTM-MET-3050 Mercury by FIMS	Sydney	Apr 20, 2017	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Apr 20, 2017	180 Day
E.coli - Method: LTM-MIC-6621	Melbourne	Apr 19, 2017	24 Hour
Thermotolerant Coliforms - Method: 6607: Microbes by Membrane Filtration AS/NZS 4276.7:2007	Melbourne	Apr 19, 2017	24 Hour
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N) - Method: APHA 4500-NO ₃ /NO ₂ Nitrate-Nitrite Nitrogen by FIA	Melbourne	Apr 20, 2017	28 Day

Description

Total Kjeldahl Nitrogen (as N)

- Method: APHA 4500 TKN

Testing Site

Melbourne

Extracted

Apr 20, 2017

Holding Time

7 Day

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Acidity (as CaCO ₃)	mg/L	< 10			10	Pass	
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chloride	mg/L	< 1			1	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.05			0.05	Pass	
Phosphorus reactive (as P)	mg/L	< 0.05			0.05	Pass	
Sulphate (as SO ₄)	mg/L	< 5			5	Pass	
Total Dissolved Solids	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Turbidity	NTU	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO ₃)	mg/L	< 10			10	Pass	
Total Alkalinity (as CaCO ₃)	mg/L	< 20			20	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.00005			0.00005	Pass	
Cadmium (filtered)	mg/L	< 0.00005			0.00005	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	99			70-130	Pass	
TRH C10-C14	%	100			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	107			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
Xylenes - Total	%	98			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	83			70-130	Pass	
TRH C6-C10	%	98			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	106			70-130	Pass	
LCS - % Recovery							
Acidity (as CaCO3)	%	89			70-130	Pass	
Ammonia (as N)	%	90			70-130	Pass	
Chloride	%	106			70-130	Pass	
Nitrate & Nitrite (as N)	%	91			70-130	Pass	
Nitrate (as N)	%	90			70-130	Pass	
Nitrite (as N)	%	109			70-130	Pass	
Phosphate total (as P)	%	98			70-130	Pass	
Phosphorus reactive (as P)	%	105			70-130	Pass	
Sulphate (as SO4)	%	119			70-130	Pass	
Total Dissolved Solids	%	114			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	97			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code	
Carbonate Alkalinity (as CaCO ₃)	%	96			70-130	Pass		
Total Alkalinity (as CaCO ₃)	%	97			70-130	Pass		
LCS - % Recovery								
Heavy Metals								
Aluminium	%	76			70-130	Pass		
Aluminium (filtered)	%	100			70-130	Pass		
Arsenic	%	89			70-130	Pass		
Arsenic (filtered)	%	97			70-130	Pass		
Cadmium	%	87			70-130	Pass		
Cadmium (filtered)	%	102			70-130	Pass		
Chromium	%	91			70-130	Pass		
Chromium (filtered)	%	99			70-130	Pass		
Copper	%	91			70-130	Pass		
Copper (filtered)	%	98			70-130	Pass		
Iron	%	89			70-130	Pass		
Iron (filtered)	%	97			70-130	Pass		
Lead	%	102			70-130	Pass		
Lead (filtered)	%	100			70-130	Pass		
Manganese	%	86			70-130	Pass		
Manganese (filtered)	%	95			70-130	Pass		
Mercury	%	100			70-130	Pass		
Mercury (filtered)	%	72			70-130	Pass		
Nickel	%	89			70-130	Pass		
Nickel (filtered)	%	99			70-130	Pass		
Selenium	%	105			70-130	Pass		
Selenium (filtered)	%	85			70-130	Pass		
Zinc	%	85			70-130	Pass		
Zinc (filtered)	%	100			70-130	Pass		
LCS - % Recovery								
Alkali Metals								
Calcium	%	94			70-130	Pass		
Magnesium	%	102			70-130	Pass		
Potassium	%	86			70-130	Pass		
Sodium	%	87			70-130	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C10-C14	M17-Ap14383	NCP	%	106		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16	M17-Ap14383	NCP	%	102		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (as N)	M17-Ap14534	NCP	%	88		70-130	Pass	
Nitrate & Nitrite (as N)	M17-Ap14534	NCP	%	93		70-130	Pass	
Nitrate (as N)	M17-Ap14534	NCP	%	93		70-130	Pass	
Nitrite (as N)	M17-Ap14534	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Alkalinity (speciated)				Result 1				
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ap16176	NCP	%	104		70-130	Pass	
Total Alkalinity (as CaCO ₃)	M17-Ap16176	NCP	%	104		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Aluminium	M17-Ap14976	CP	%	81		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	M17-Ap14976	CP	%	96			70-130	Pass	
Cadmium	M17-Ap14976	CP	%	95			70-130	Pass	
Chromium	M17-Ap14976	CP	%	96			70-130	Pass	
Copper	M17-Ap14976	CP	%	93			70-130	Pass	
Iron	M17-Ap14976	CP	%	97			70-130	Pass	
Lead	M17-Ap14976	CP	%	103			70-130	Pass	
Manganese	M17-Ap14976	CP	%	90			70-130	Pass	
Mercury	M17-Ap14976	CP	%	101			70-130	Pass	
Nickel	M17-Ap14976	CP	%	91			70-130	Pass	
Selenium	M17-Ap14976	CP	%	110			70-130	Pass	
Zinc	M17-Ap14976	CP	%	79			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ap14976	CP	%	97			70-130	Pass	
Magnesium	M17-Ap14976	CP	%	93			70-130	Pass	
Potassium	M17-Ap14976	CP	%	85			70-130	Pass	
Sodium	M17-Ap14976	CP	%	89			70-130	Pass	
Spike - % Recovery									
				Result 1					
Chloride	M17-Ap14977	CP	%	118			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	M17-Ap14977	CP	%	115			70-130	Pass	
Arsenic (filtered)	M17-Ap14977	CP	%	117			70-130	Pass	
Cadmium (filtered)	M17-Ap14977	CP	%	120			70-130	Pass	
Chromium (filtered)	M17-Ap14977	CP	%	112			70-130	Pass	
Copper (filtered)	M17-Ap14977	CP	%	107			70-130	Pass	
Iron (filtered)	M17-Ap14977	CP	%	122			70-130	Pass	
Lead (filtered)	M17-Ap14977	CP	%	104			70-130	Pass	
Manganese (filtered)	M17-Ap14977	CP	%	109			70-130	Pass	
Mercury (filtered)	M17-Ap14977	CP	%	97			70-130	Pass	
Nickel (filtered)	M17-Ap14977	CP	%	108			70-130	Pass	
Selenium (filtered)	M17-Ap14977	CP	%	107			70-130	Pass	
Zinc (filtered)	M17-Ap14977	CP	%	113			70-130	Pass	
Spike - % Recovery									
				Result 1					
Sulphate (as SO4)	M17-Ap14984	CP	%	112			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO3)	M17-Ap14549	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	M17-Ap14993	CP	%	93			70-130	Pass	
Magnesium	M17-Ap14993	CP	%	93			70-130	Pass	
Potassium	M17-Ap14993	CP	%	93			70-130	Pass	
Sodium	M17-Ap14993	CP	%	88			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-Ap18750	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M17-Ap14485	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M17-Ap14485	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M17-Ap14485	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M17-Ap18750	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M17-Ap18750	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M17-Ap18750	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M17-Ap18750	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M17-Ap18750	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M17-Ap18750	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M17-Ap18750	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M17-Ap18750	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M17-Ap14485	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M17-Ap14485	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M17-Ap14485	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Acidity (as CaCO3)	B17-Ap13019	NCP	mg/L	90	93	3.0	30%	Pass
Ammonia (as N)	M17-Ap14534	NCP	mg/L	0.05	0.04	17	30%	Pass
Chloride	M17-Ap14976	CP	mg/L	75	72	3.5	30%	Pass
Nitrate & Nitrite (as N)	M17-Ap14534	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Nitrate (as N)	M17-Ap14534	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	M17-Ap14534	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphate (as SO4)	M17-Ap14976	CP	mg/L	220	230	1.6	30%	Pass
Total Dissolved Solids	M17-Ap14540	NCP	mg/L	6500	6100	7.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-Ap14976	CP	mg/L	0.16	0.16	2.0	30%	Pass
Arsenic (filtered)	S17-Ap16670	NCP	mg/L	0.032	0.034	7.0	30%	Pass
Cadmium	M17-Ap14862	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	S17-Ap14934	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chromium (filtered)	M17-Ap14976	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Iron	M17-Ap14862	NCP	mg/L	0.16	0.16	2.0	30%	Pass
Iron (filtered)	S17-Ap16670	NCP	mg/L	0.68	0.67	1.0	30%	Pass
Lead	S17-Ap14934	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M17-Ap14976	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M17-Ap14976	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nickel (filtered)	M17-Ap14976	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Selenium	M17-Ap14862	NCP	mg/L	0.002	0.002	2.0	30%	Pass
Zinc	M17-Ap14862	NCP	mg/L	0.036	0.039	7.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ap14976	CP	mg/L	80	80	1.0	30%	Pass
Magnesium	M17-Ap14976	CP	mg/L	15	15	3.0	30%	Pass
Potassium	M17-Ap14976	CP	mg/L	16	15	3.0	30%	Pass
Sodium	M17-Ap14976	CP	mg/L	59	58	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ap14980	CP	mg/L	0.24	0.24	2.8	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (at 25°C)	M17-Ap14981	CP	uS/cm	690	700	2.0	30%	Pass
pH	M17-Ap14981	CP	pH Units	6.7	6.7	pass	30%	Pass
Phosphate total (as P)	M17-Ap14981	CP	mg/L	1.3	1.4	5.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M17-Ap14981	CP	mg/L	2.1	2.1	1.8	30%	Pass

Duplicate								
Alkalinity (speciated)				Result 1	Result 2	RPD		
Bicarbonate Alkalinity (as CaCO ₃)	M17-Ap14981	CP	mg/L	65	65	<1	30%	Pass
Carbonate Alkalinity (as CaCO ₃)	M17-Ap14981	CP	mg/L	< 10	< 10	<1	30%	Pass
Hydroxide Alkalinity (as CaCO ₃)	M17-Ap14981	CP	mg/L	< 10	< 10	<1	30%	Pass
Total Alkalinity (as CaCO ₃)	M17-Ap14981	CP	mg/L	65	65	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	M17-Ap14986	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Chromium (filtered)	M17-Ap14986	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M17-Ap14986	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead (filtered)	M17-Ap14986	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	M17-Ap14986	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M17-Ap14986	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M17-Ap14986	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc (filtered)	M17-Ap14986	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium	M17-Ap14987	CP	mg/L	0.52	0.62	18	30%	Pass
Arsenic	M17-Ap14987	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	M17-Ap14987	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese	M17-Ap14987	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury	M17-Ap14987	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	M17-Ap14987	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Phosphorus reactive (as P)	M17-Ap14992	CP	mg/L	0.08	0.08	2.2	30%	Pass
Turbidity	M17-Ap14992	CP	NTU	2.8	2.9	3.0	30%	Pass
Duplicate								
Alkali Metals				Result 1	Result 2	RPD		
Calcium	M17-Ap14993	CP	mg/L	1.8	1.8	<1	30%	Pass
Magnesium	M17-Ap14993	CP	mg/L	6.6	6.5	1.0	30%	Pass
Potassium	M17-Ap14993	CP	mg/L	1.3	1.3	<1	30%	Pass
Sodium	M17-Ap14993	CP	mg/L	33	32	3.0	30%	Pass

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
M15	LOR raised due to physical properties of sample
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q19	TDS may bias high due to the presence of fine particulate or colloidal matter that may pass through the filter paper.

Authorised By

Natalie Krasselt	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ian Bolch	Senior Analyst-Microbiology (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Metal (NSW)


Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS

Work Order : **EP1703477**
Client : **COFFEY ENVIRONMENTS PTY LTD**
Contact : RICHELLE BUNBURY
Address : SUITE 2, 53 BURSWOOD ROAD
 BURSWOOD WA, AUSTRALIA 6100
Telephone : +61 08 6462 7900
Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring
Order number : ----
C-O-C number : ----
Sampler : ----
Site :
Quote number : EN/007/17
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 5
Laboratory : Environmental Division Perth
Contact : Lauren Ockwell
Address : 10 Hod Way Malaga WA Australia 6090
Telephone : 08 9209 7606
Date Samples Received : 10-Apr-2017 16:00
Date Analysis Commenced : 10-Apr-2017
Issue Date : 19-Apr-2017 22:50



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ORC Metals conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- MF = membrane filtration
- CFU = colony forming unit
- EG094: It is recognised that total Mn, Zn is less than dissolved for samples EP1703477-004, 005. However, the difference is within experimental variation of the methods.
- It is recognised that total phosphorus (EK067G) is less than reactive phosphorus (EK071G) for sample 'QC348'. However, the difference is within experimental variation of the methods.
- EA015H (Total Dissolved Solids): TDS for sample 'QC349' biasing high due to possible sample matrix interferences.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC346	QC347	QC348	QC349	QC353
Client sampling date / time				10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EP1703477-001	EP1703477-002	EP1703477-003	EP1703477-004	EP1703477-005	
				Result	Result	Result	Result	Result	
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit	7.45	7.85	7.78	6.06	6.98	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	2280	1840	1630	7870	3990	
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L	1700	1230	1120	6350	2700	
EA045: Turbidity									
Turbidity	----	0.1	NTU	----	----	----	----	9.5	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	211	184	194	26	27	
Total Alkalinity as CaCO3	----	1	mg/L	211	184	194	26	27	
ED038A: Acidity									
Acidity as CaCO3	----	1	mg/L	16	6	12	27	8	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25	13	162	76	
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L	695	582	487	2870	1300	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	87	49	67	28	12	
Magnesium	7439-95-4	1	mg/L	52	36	38	170	80	
Sodium	7440-23-5	1	mg/L	355	325	248	1450	774	
Potassium	7440-09-7	1	mg/L	8	4	6	45	16	
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	<0.00004	0.00048	<0.00004	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	7	23	9	9	32	
Arsenic	7440-38-2	0.2	µg/L	0.2	0.2	0.2	1.1	<0.2	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
Chromium	7440-47-3	0.2	µg/L	0.8	0.3	0.2	0.5	0.2	
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC346	QC347	QC348	QC349	QC353
Client sampling date / time					10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00
Compound	CAS Number	LOR	Unit	EP1703477-001	EP1703477-002	EP1703477-003	EP1703477-004	EP1703477-005	EP1703477-005
				Result	Result	Result	Result	Result	Result
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Iron	7439-89-6	2	µg/L	91	73	12	1150	850	
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	<0.1	1.1	0.1	
Manganese	7439-96-5	0.5	µg/L	5.2	6.6	3.4	13.8	10.0	
Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	<0.5	2.2	1.2	
Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	<0.2	0.2	<0.2	
Zinc	7440-66-6	1	µg/L	8	5	10	11	7	
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L	5420	5020	3390	31800	46	
Arsenic	7440-38-2	0.2	µg/L	2.1	2.8	5.0	7.8	<0.2	
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	<0.05	0.16	<0.05	
Chromium	7440-47-3	0.2	µg/L	8.5	8.9	4.8	79.8	0.3	
Copper	7440-50-8	0.5	µg/L	4.2	1.9	0.7	13.0	<0.5	
Iron	7439-89-6	2	µg/L	7130	2970	6980	6330	1380	
Lead	7439-92-1	0.1	µg/L	4.1	3.7	3.9	113	0.1	
Manganese	7439-96-5	0.5	µg/L	9.6	8.8	4.5	15.3	9.7	
Selenium	7782-49-2	0.2	µg/L	1.5	0.8	0.9	2.5	<0.2	
Nickel	7440-02-0	0.5	µg/L	5.8	3.9	5.5	7.4	1.2	
Zinc	7440-66-6	1	µg/L	58	9	32	9	2	
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L	0.41	0.15	0.29	0.22	0.07	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	0.01	<0.01	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.3	0.3	0.5	1.0	
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L	0.5	0.3	0.3	0.5	1.0	
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L	0.07	0.15	0.07	0.30	0.03	
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.07	0.14	0.10	0.03	<0.01	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC346	QC347	QC348	QC349	QC353
Client sampling date / time				10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	10-Apr-2017 00:00	
Compound	CAS Number	LOR	Unit	EP1703477-001	EP1703477-002	EP1703477-003	EP1703477-004	EP1703477-005	
				Result	Result	Result	Result	Result	
EN055: Ionic Balance									
Total Anions	----	0.01	meq/L	23.8	20.6	17.9	84.8	38.8	
Total Cations	----	0.01	meq/L	24.3	19.6	17.4	79.6	41.2	
Ionic Balance	----	0.01	%	0.93	2.40	1.34	3.19	3.08	
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL	----	----	----	----	62	
<i>Escherichia coli</i>	----	1	CFU/100mL	----	----	----	----	62	

QUALITY CONTROL REPORT

Work Order	: EP1703477	Page	: 1 of 8
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Contact	: Lauren Ockwell
Address	: SUITE 2, 53 BURSWOOD ROAD BURSWOOD WA, AUSTRALIA 6100	Address	: 10 Hod Way Malaga WA Australia 6090
Telephone	: +61 08 6462 7900	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 10-Apr-2017
Order number	: ----	Date Analysis Commenced	: 10-Apr-2017
C-O-C number	: ----	Issue Date	: 19-Apr-2017
Sampler	: ----		
Site	:		
Quote number	: EN/007/17		
No. of samples received	: 5		
No. of samples analysed	: 5		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics, Malaga, WA
Indra Astuty	Instrument Chemist	Perth Inorganics, Malaga, WA
Jeremy Truong	Laboratory Manager	Perth Inorganics, Malaga, WA
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Tyrone Cole	Inorganics Preparation Supervisor	Perth Inorganics, Malaga, WA
Vinitha Kesavan	Analyst	Perth Microbiology, Malaga, WA



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005P: pH by PC Titrator (QC Lot: 837715)									
EP1703472-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.19	7.18	0.139	0% - 20%
EP1703460-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	2.16	2.16	0.00	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 837713)									
EP1703472-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	13300	13500	1.02	0% - 20%
EP1703460-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	5810	5780	0.514	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 836988)									
EP1703455-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	119000	121000	1.37	0% - 20%
EP1703477-005	QC353	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2700	2650	2.02	0% - 20%
EA045: Turbidity (QC Lot: 833571)									
EP1703472-001	Anonymous	EA045: Turbidity	----	0.1	NTU	1.0	1.0	0.00	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 837712)									
EP1703472-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	209	219	4.77	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	209	219	4.77	0% - 20%
EP1703460-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	0.00	No Limit
ED038A: Acidity (QC Lot: 842908)									
EP1703407-001	Anonymous	ED038: Acidity as CaCO3	----	1	mg/L	39	37	5.00	0% - 20%
EP1703477-004	QC349	ED038: Acidity as CaCO3	----	1	mg/L	27	26	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 833650)									
EP1703460-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	355	358	0.830	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 833650) - continued									
EP1703472-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1650	1670	0.760	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 833651)									
EP1703460-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1210	1200	1.02	0% - 20%
EP1703472-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	4860	5110	5.03	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 836544)									
EP1703477-001	QC346	ED093F: Calcium	7440-70-2	1	mg/L	87	88	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	52	52	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	355	356	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	8	8	0.00	No Limit
EP1703501-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	19	19	0.00	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	5	5	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	123	122	0.00	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	5	5	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 839202)									
EP1703411-001	Anonymous	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1703477-003	QC348	EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG035T: Total Mercury by FIMS (QC Lot: 839194)									
EP1703477-001	QC346	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EP1703527-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	<0.00004	0.00	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 838862)									
EP1703477-001	QC346	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.00	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	91	90	1.40	0% - 20%
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 838863)									
EP1703477-001	QC346	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.00	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.2	0.3	0.00	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	0.8	0.8	0.00	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	5.2	5.0	3.97	0% - 50%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	8	8	0.00	No Limit
EG094A-F: Aluminium	7429-90-5	5	µg/L	7	8	0.00	No Limit		
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 838875)									
EP1703477-001	QC346	EG094B-T: Selenium	7782-49-2	0.2	µg/L	1.5	1.4	7.91	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	7130	6880	3.58	0% - 20%
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 838876)									
EP1703477-001	QC346	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	4.1	3.9	5.62	0% - 20%
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	2.1	2.0	5.35	0% - 50%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 838876) - continued									
EP1703477-001	QC346	EG094A-T: Chromium	7440-47-3	0.2	µg/L	8.5	8.1	4.11	0% - 20%
		EG094A-T: Copper	7440-50-8	0.5	µg/L	4.2	4.0	4.03	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	9.6	8.9	7.22	0% - 50%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	5.8	5.4	6.12	0% - 50%
		EG094A-T: Zinc	7440-66-6	1	µg/L	58	56	3.09	0% - 20%
		EG094A-T: Aluminium	7429-90-5	5	µg/L	5420	5140	5.48	0% - 20%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 833663)									
EP1703471-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.57	0.59	3.09	0% - 20%
EP1703477-005	QC353	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.07	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 833649)									
EP1703471-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1703472-004	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 833664)									
EP1703471-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1703477-005	QC353	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 836821)									
EP1703477-001	QC346	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 836820)									
EP1703477-001	QC346	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.07	0.05	21.2	No Limit
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 833648)									
EP1703471-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.05	0.05	0.00	No Limit
EP1703472-004	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
EA005P: pH by PC Titrator (QCLot: 837715)									
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	99	102	
				----	7 pH Unit	100	99	102	
EA010P: Conductivity by PC Titrator (QCLot: 837713)									
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	97.4	95	105	
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 836988)									
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	108	83	111	
				<10	1000 mg/L	105	70	130	
EA045: Turbidity (QCLot: 833571)									
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.0	91	107	
ED037P: Alkalinity by PC Titrator (QCLot: 837712)									
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-00 1	1	mg/L	<1	----	----	----	----	
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----	
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	112	76	126	
				<1	200 mg/L	96.8	90	106	
ED038A: Acidity (QCLot: 842908)									
ED038: Acidity as CaCO3	----	----	mg/L	----	20 mg/L	110	85	119	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 833650)									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	89	113	
				<1	100 mg/L	94.3	79	121	
ED045G: Chloride by Discrete Analyser (QCLot: 833651)									
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	84	120	
				<1	1000 mg/L	105	84	110	
ED093F: Dissolved Major Cations (QCLot: 836544)									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	95.2	91	109	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	94.6	90	108	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	93.2	87	111	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	95.0	90	110	
EG035F: Dissolved Mercury by FIMS (QCLot: 839202)									
EG035F-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	105	83	105	
EG035T: Total Mercury by FIMS (QCLot: 839194)									
EG035T-LL: Mercury	7439-97-6	0.00004	mg/L	<0.00004	0.0001 mg/L	103	85	105	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 838862)									
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	105	79	115	
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	104	70	122	
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 838863)									
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	97.7	89	117	
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	94.8	79	121	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	103	87	111	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	102	80	122	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	90.8	83	117	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	102	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	99.5	83	123	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	90.0	86	118	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	100	83	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 838875)									
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	101	82	124	
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	89.2	77	121	
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 838876)									
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	109	85	129	
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	96.9	89	121	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	91.2	85	113	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	97.9	87	127	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	102	90	122	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	104	79	125	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	96.9	88	120	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	104	90	122	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	93.0	81	129	
EK055G: Ammonia as N by Discrete Analyser (QCLot: 833663)									
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	97.5	87	115	
EK057G: Nitrite as N by Discrete Analyser (QCLot: 833649)									
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	105	86	112	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 833664)									
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.8	92	112	
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 836821)									
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	94.7	82	110	
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 836820)									
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	95.6	70	130	
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 833648)									
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	105	87	115	



Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
						Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 833650)							
EP1703460-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	70.3	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 833651)							
EP1703460-001	Anonymous	ED045G: Chloride	16887-00-6	1000 mg/L	113	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 839202)							
EP1703477-004	QC349	EG035F-LL: Mercury	7439-97-6	0.0001 mg/L	93.0	70	130
EG035T: Total Mercury by FIMS (QCLot: 839194)							
EP1703510-001	Anonymous	EG035T-LL: Mercury	7439-97-6	0.0001 mg/L	71.0	70	130
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 838863)							
EP1703477-002	QC347	EG094A-F: Arsenic	7440-38-2	50 µg/L	109	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	98.8	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	97.6	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	95.8	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	100	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	91.9	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	99.5	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	98.0	70	130
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 838876)							
EP1703477-002	QC347	EG094A-T: Arsenic	7440-38-2	50 µg/L	101	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	93.2	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	97.5	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	100	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	102	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	93.2	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	106	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	92.5	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 833663)							
EP1703454-029	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	99.6	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 833649)							
EP1703454-029	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	106	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 833664)							
EP1703454-029	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	104	70	130

Page : 8 of 8
 Work Order : EP1703477
 Client : COFFEY ENVIRONMENTS PTY LTD
 Project : ENAUPERT04483AA NL_Baseline GW_ SW Monitoring



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Recovery Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 836821)							
EP1703477-001	QC346	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	79.6	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 836820)							
EP1703477-001	QC346	EK067G: Total Phosphorus as P	----	1 mg/L	99.7	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 833648)							
EP1703454-029	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	121	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EP1703477	Page	: 1 of 9
Client	: COFFEY ENVIRONMENTS PTY LTD	Laboratory	: Environmental Division Perth
Contact	: RICHELLE BUNBURY	Telephone	: 08 9209 7606
Project	: ENAUPERT04483AA NL_Baseline GW_ SW Monitoring	Date Samples Received	: 10-Apr-2017
Site	:	Issue Date	: 19-Apr-2017
Sampler	: ----	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis			
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
QC346, QC348, QC353	QC347, QC349,	----	----	----	12-Apr-2017	10-Apr-2017	2

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Container / Client Sample ID(s)	Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
QC346, QC348, QC353	10-Apr-2017	QC347, QC349,	----	----	----	12-Apr-2017	10-Apr-2017	*
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P)								
QC346, QC348, QC353	10-Apr-2017	QC347, QC349,	----	----	----	12-Apr-2017	08-May-2017	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
QC346, QC348, QC353	10-Apr-2017	QC347, QC349,	----	----	----	12-Apr-2017	17-Apr-2017	✓
EA045: Turbidity								
Clear Plastic Bottle - Natural (EA045)								
QC353	10-Apr-2017		----	----	----	10-Apr-2017	12-Apr-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	12-Apr-2017	24-Apr-2017	✓
ED038A: Acidity								
Clear Plastic Bottle - Natural (ED038) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	18-Apr-2017	24-Apr-2017	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	08-May-2017	✓
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	08-May-2017	✓
ED093F: Dissolved Major Cations								
Clear Plastic Bottle - Natural (ED093F) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	13-Apr-2017	17-Apr-2017	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F-LL) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	13-Apr-2017	08-May-2017	✓
EG035T: Total Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T-LL) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	18-Apr-2017	08-May-2017	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	13-Apr-2017	07-Oct-2017	✓



Matrix: **WATER** Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG094T: Total metals in Fresh water by ORC-ICPMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	13-Apr-2017	07-Oct-2017	✓	13-Apr-2017	07-Oct-2017	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	08-May-2017	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	12-Apr-2017	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	08-May-2017	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	13-Apr-2017	08-May-2017	✓	18-Apr-2017	08-May-2017	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	13-Apr-2017	08-May-2017	✓	18-Apr-2017	08-May-2017	✓
EK071G: Reactive Phosphorus as P by discrete analyser								
Clear Plastic Bottle - Natural (EK071G) QC346, QC348, QC353	QC347, QC349,	10-Apr-2017	----	----	----	10-Apr-2017	12-Apr-2017	✓
MW006: Faecal Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) QC353		10-Apr-2017	----	----	----	10-Apr-2017	11-Apr-2017	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Solids (High Level)	EA015H	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS - Low Level	EG035F-LL	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS - Low Level	EG035T-LL	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Mercury by FIMS - Low Level	EG035F-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS - Low Level	EG035T-LL	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO ₂ - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM (2013) Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	In house: Referenced to AS 4276.7 2007
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3)

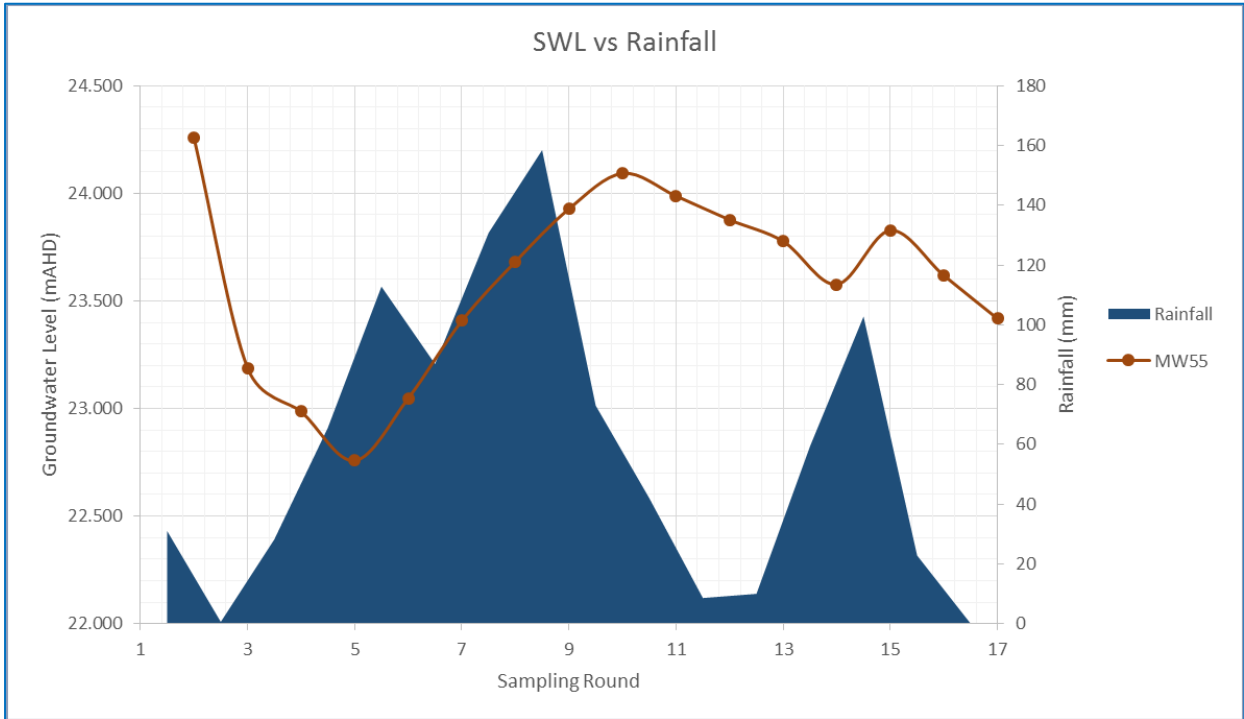


APPENDIX I

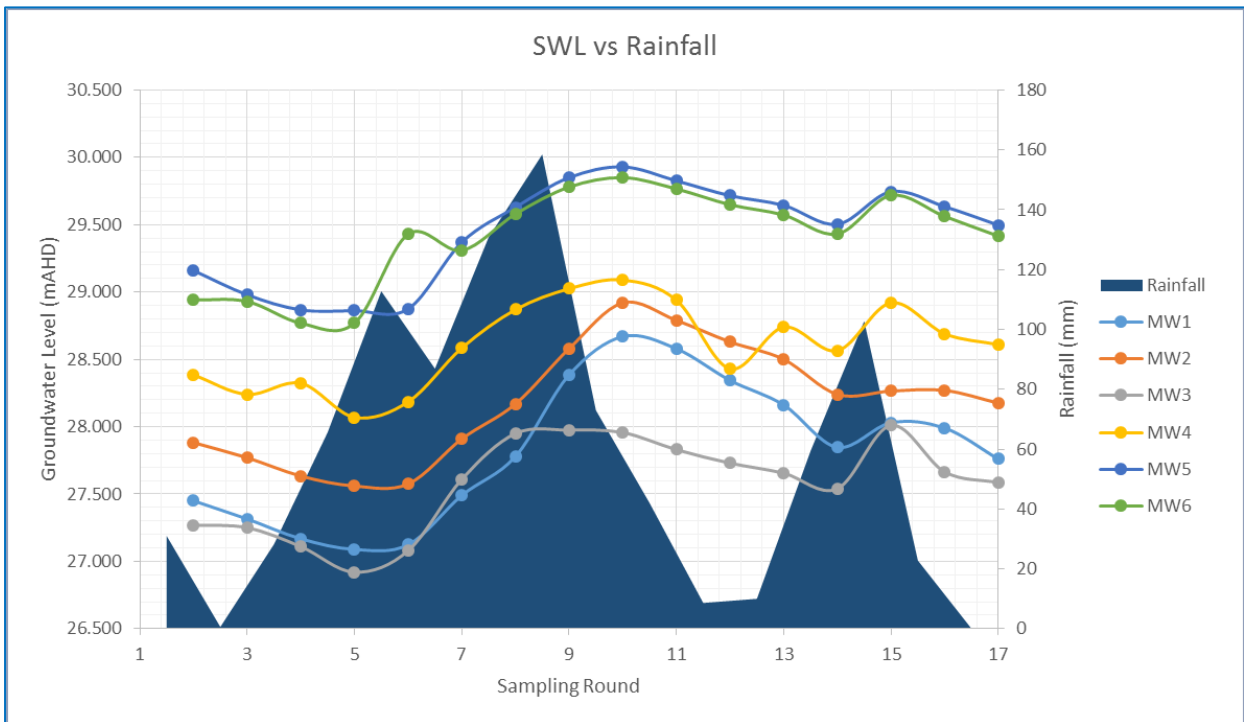
Trend Analysis Graphs

Groundwater Trend Analysis Graphs

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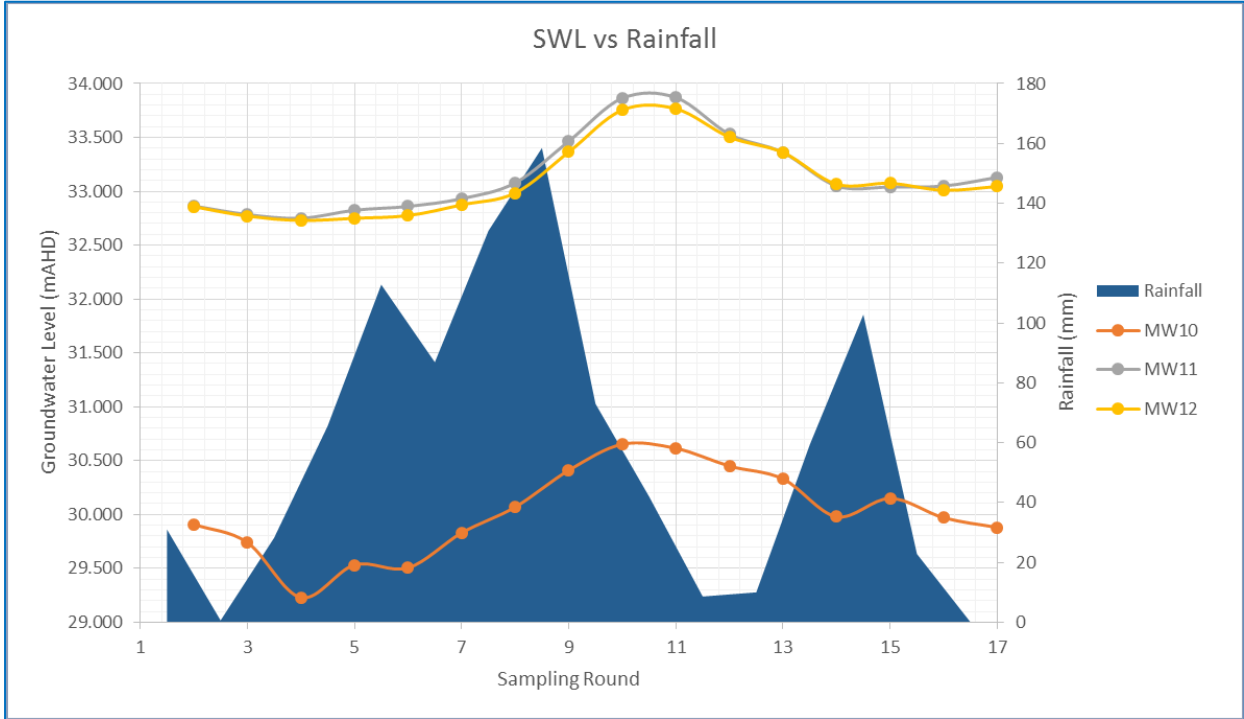
Graph 1: Groundwater levels (mAHD) affected by rainfall.



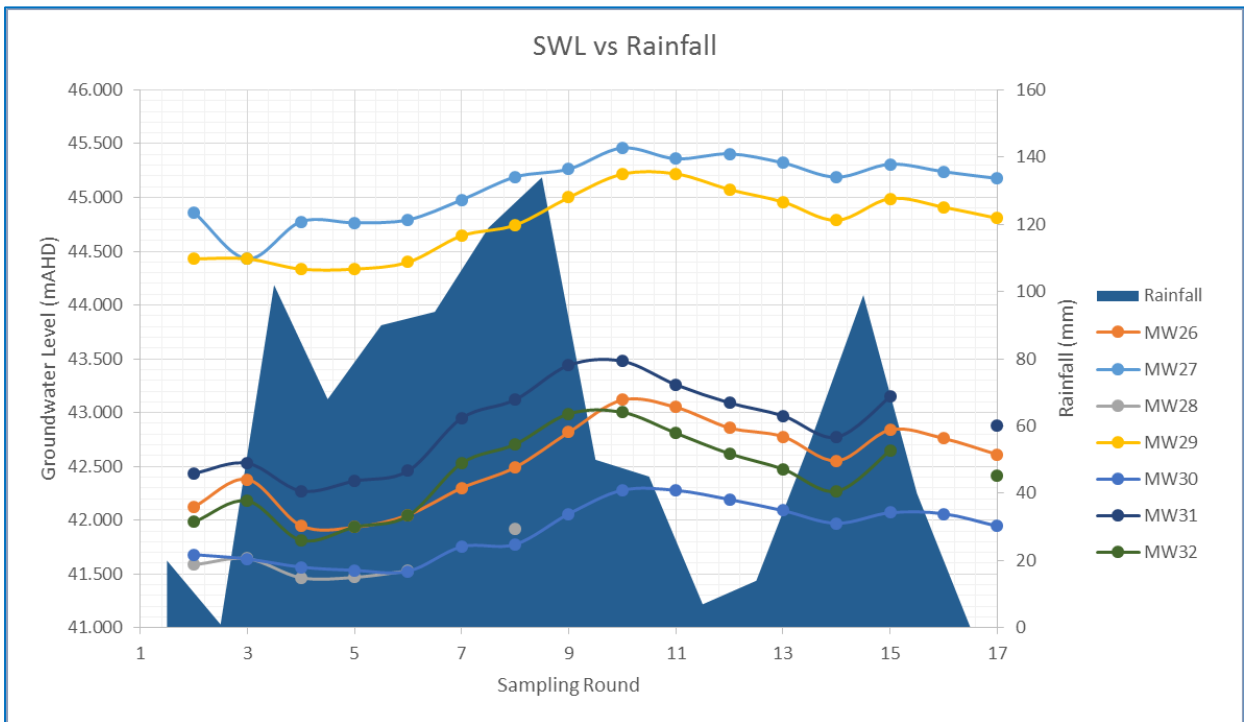
Graph 2: Groundwater levels (mAHD) affected by rainfall.

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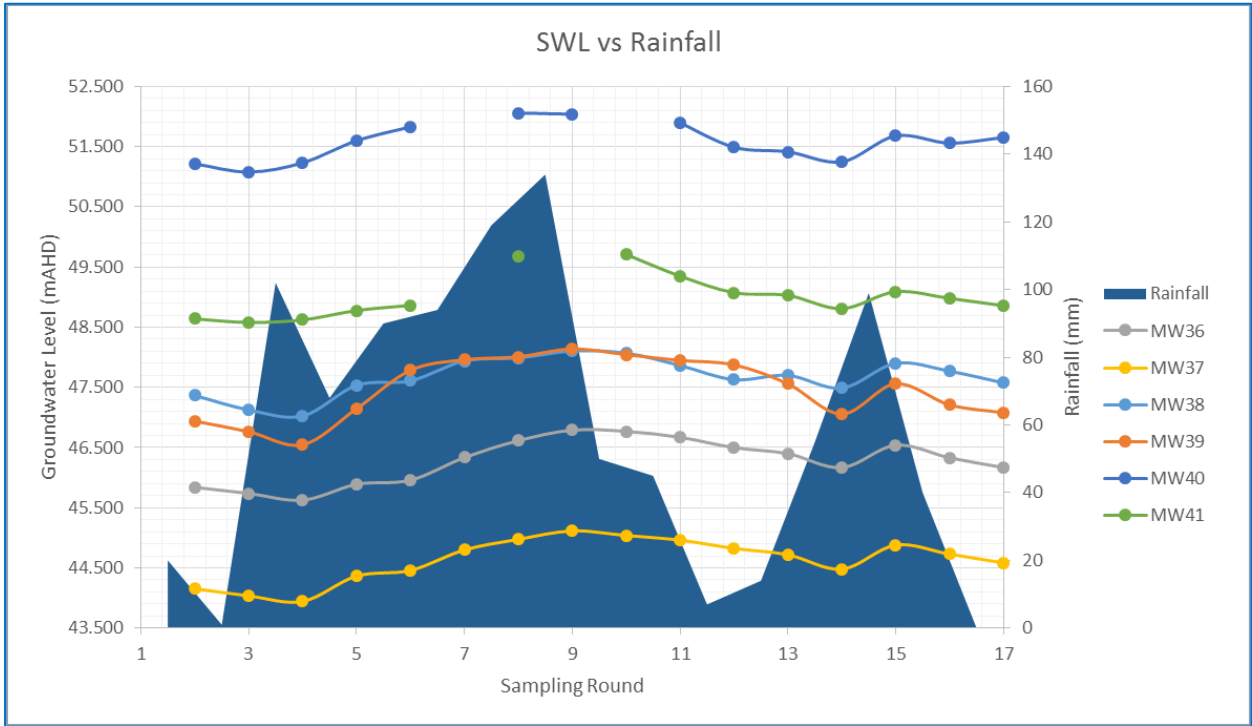
Graph 3: Groundwater levels (mAHD) affected by rainfall.



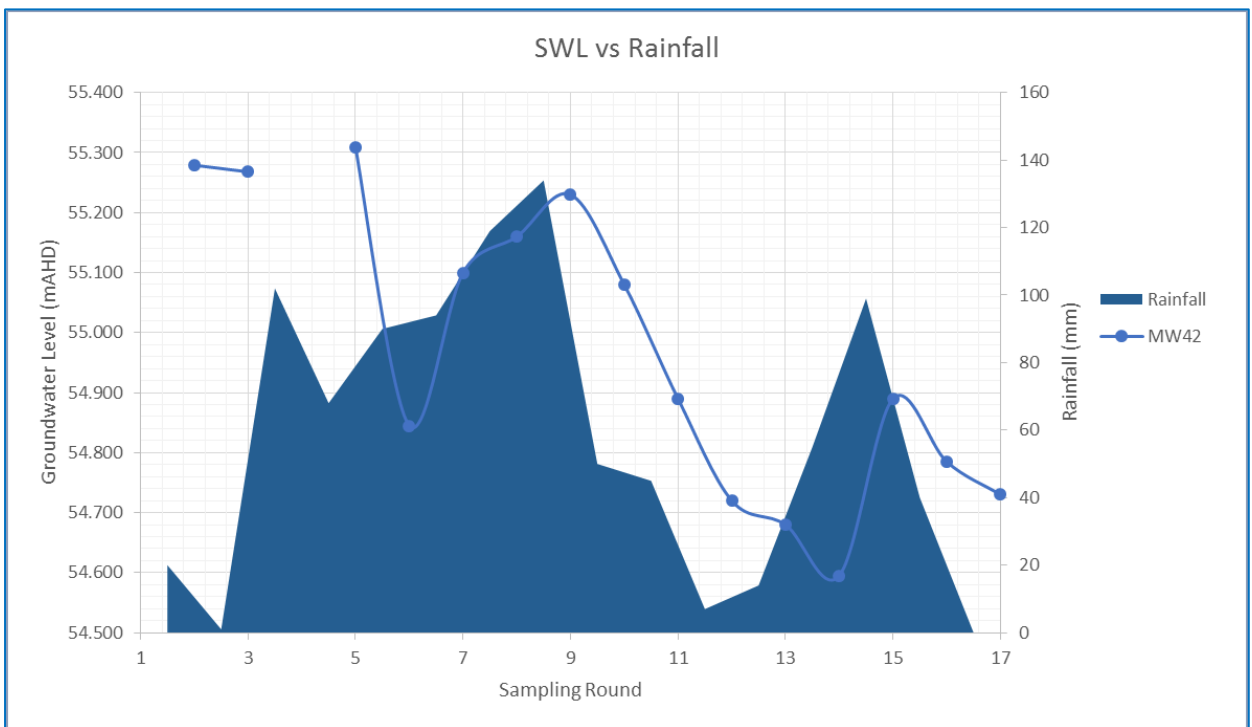
Graph 4: Groundwater levels (mAHD) affected by rainfall.

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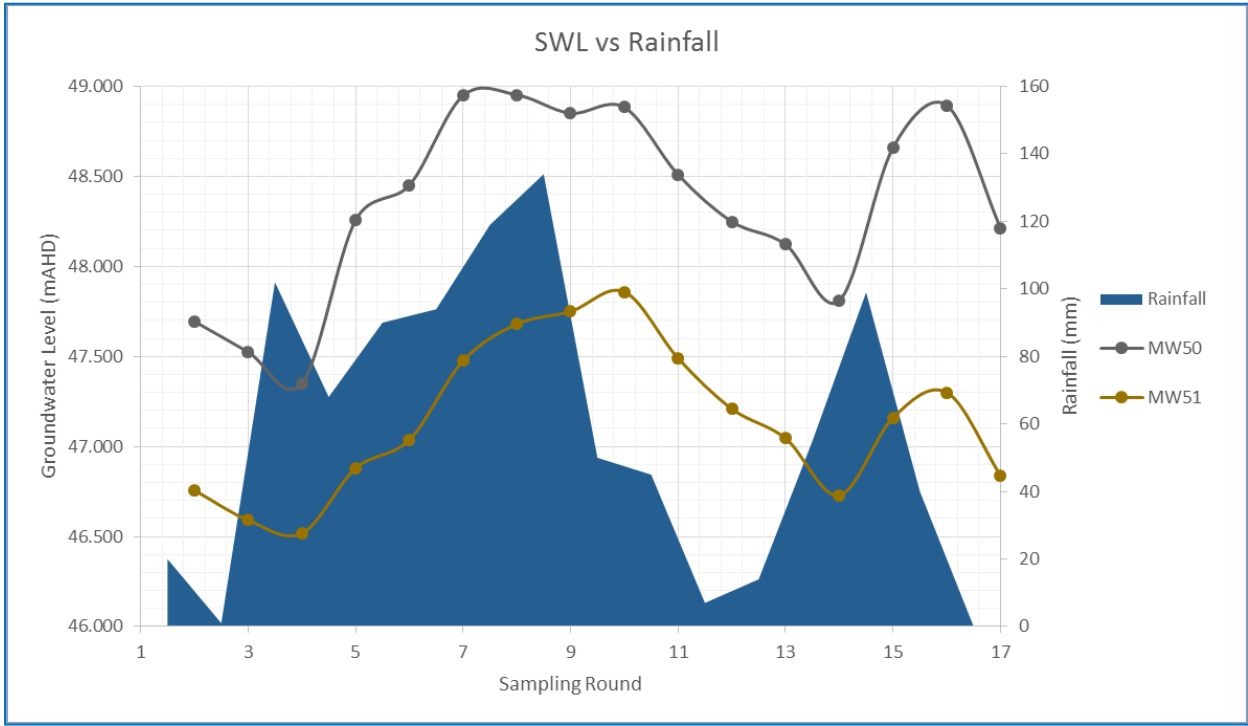
Graph 5: Groundwater levels (mAHD) affected by rainfall.



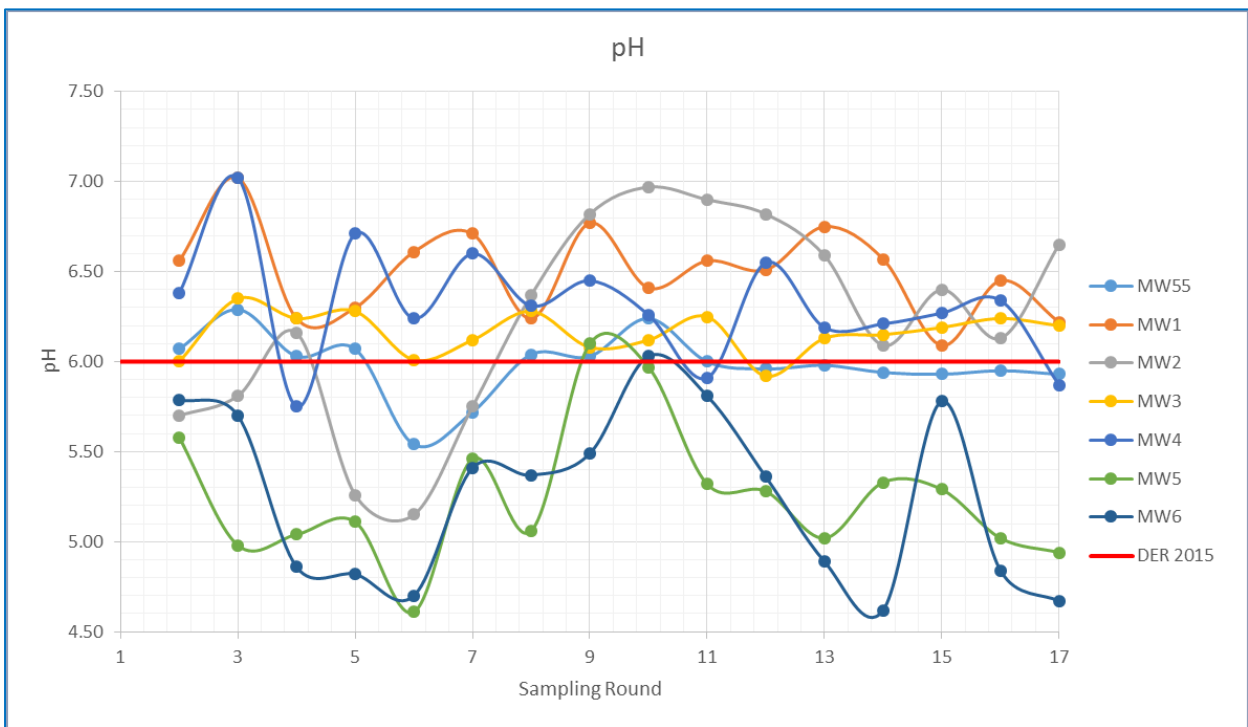
Graph 6: Groundwater levels (mAHD) affected by rainfall.

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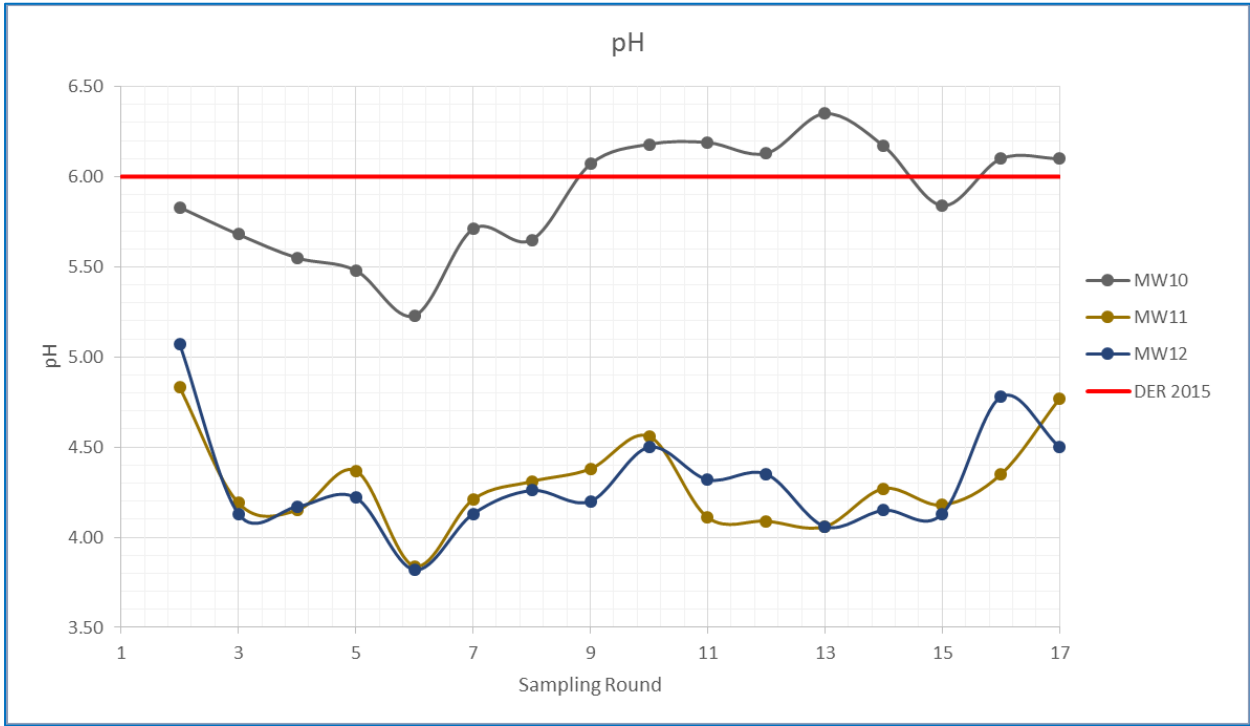
Graph 7: Groundwater levels (mAHD) affected by rainfall.



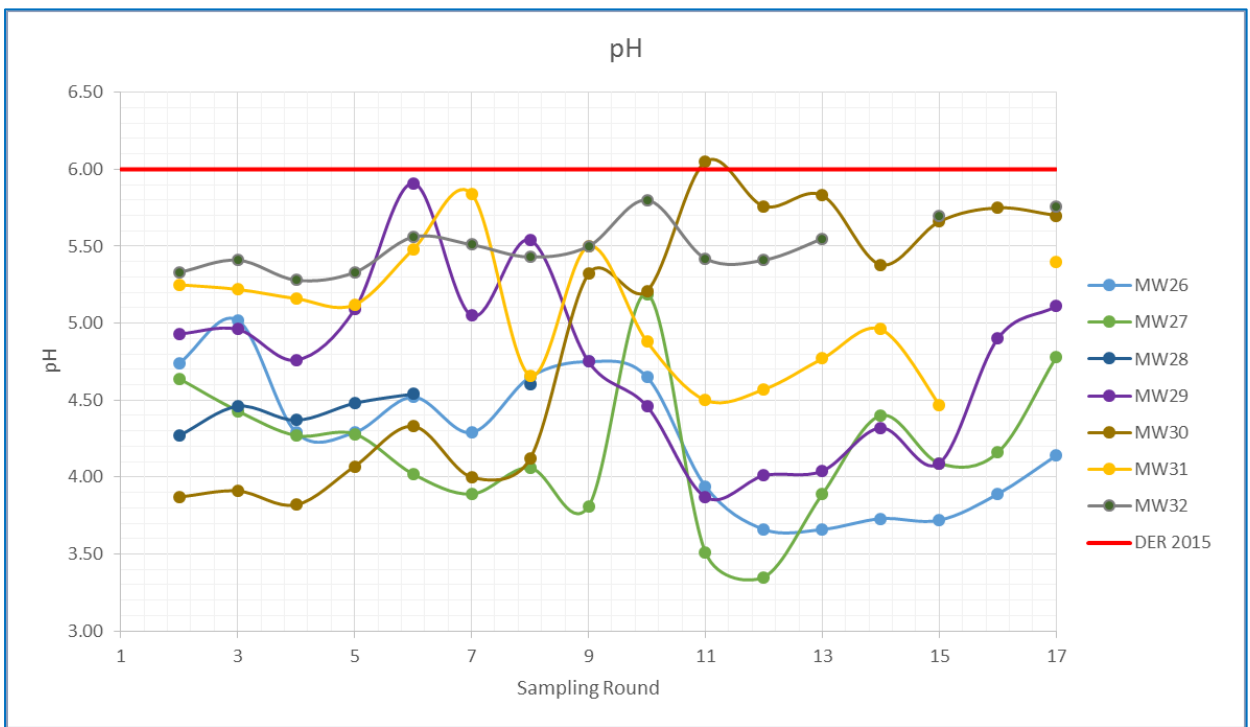
Graph 8: pH concentrations over the sampling period

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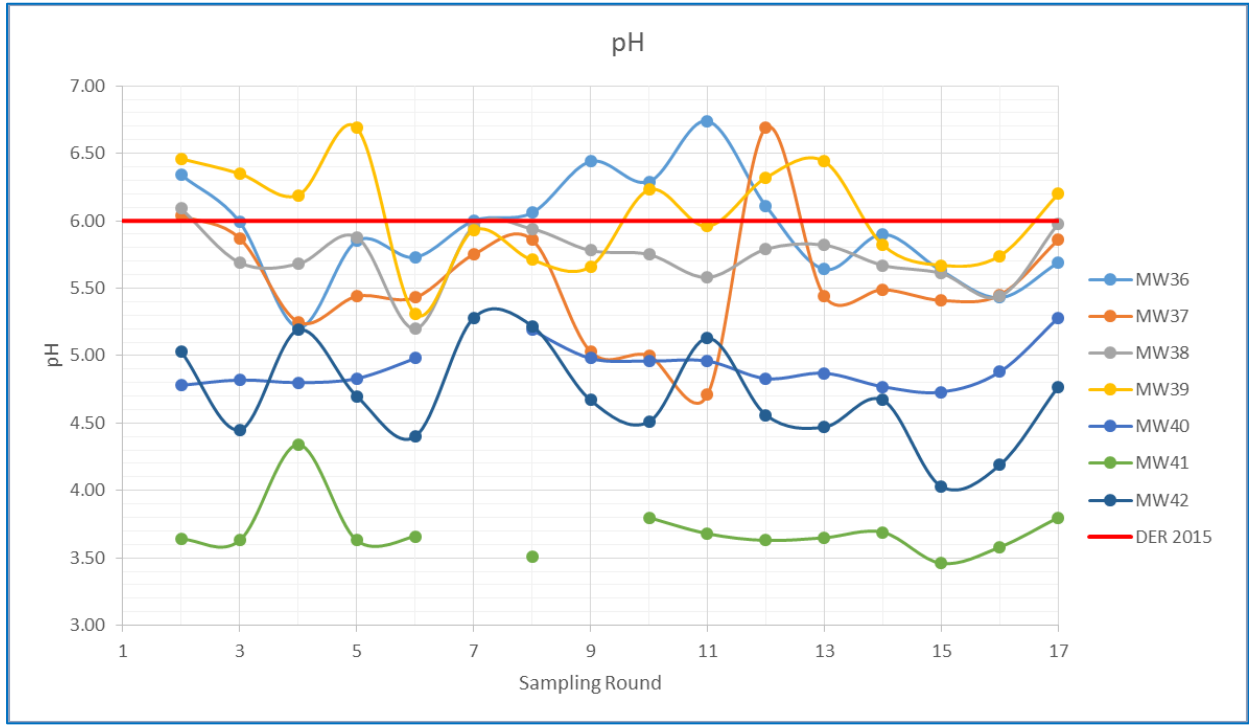
Graph 9: pH concentrations over the sampling period.



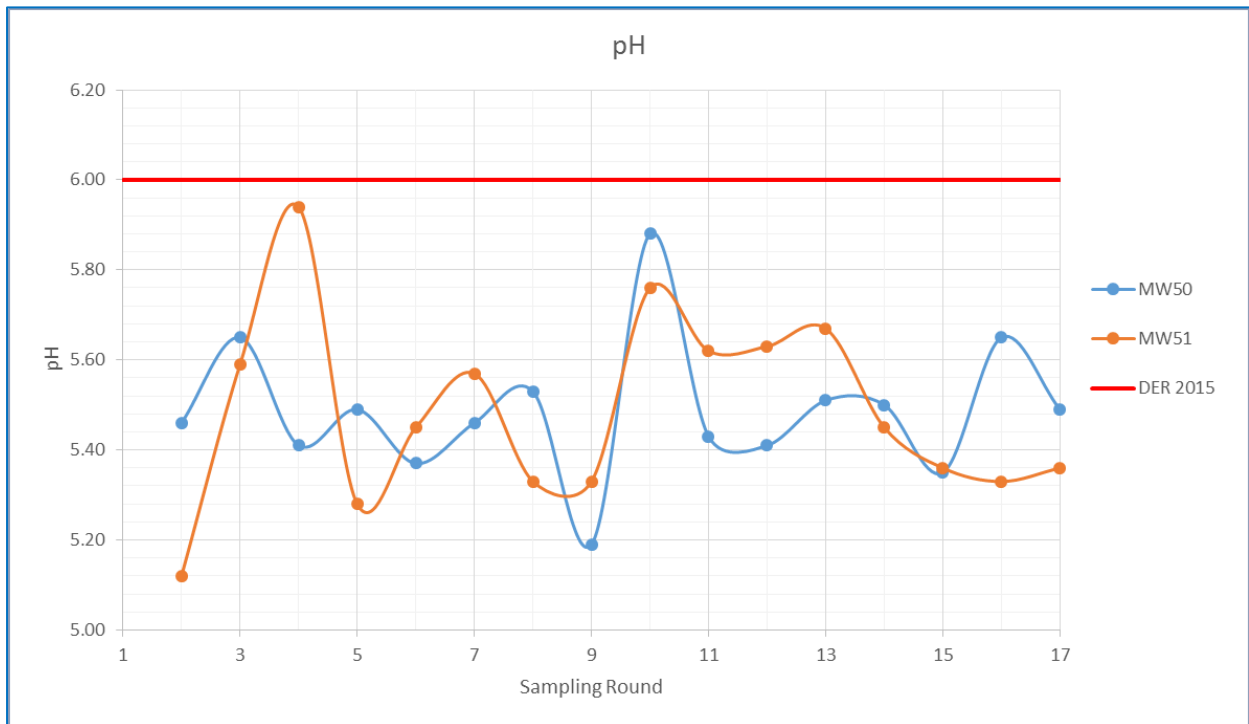
Graph 10: pH concentrations over the sampling period.

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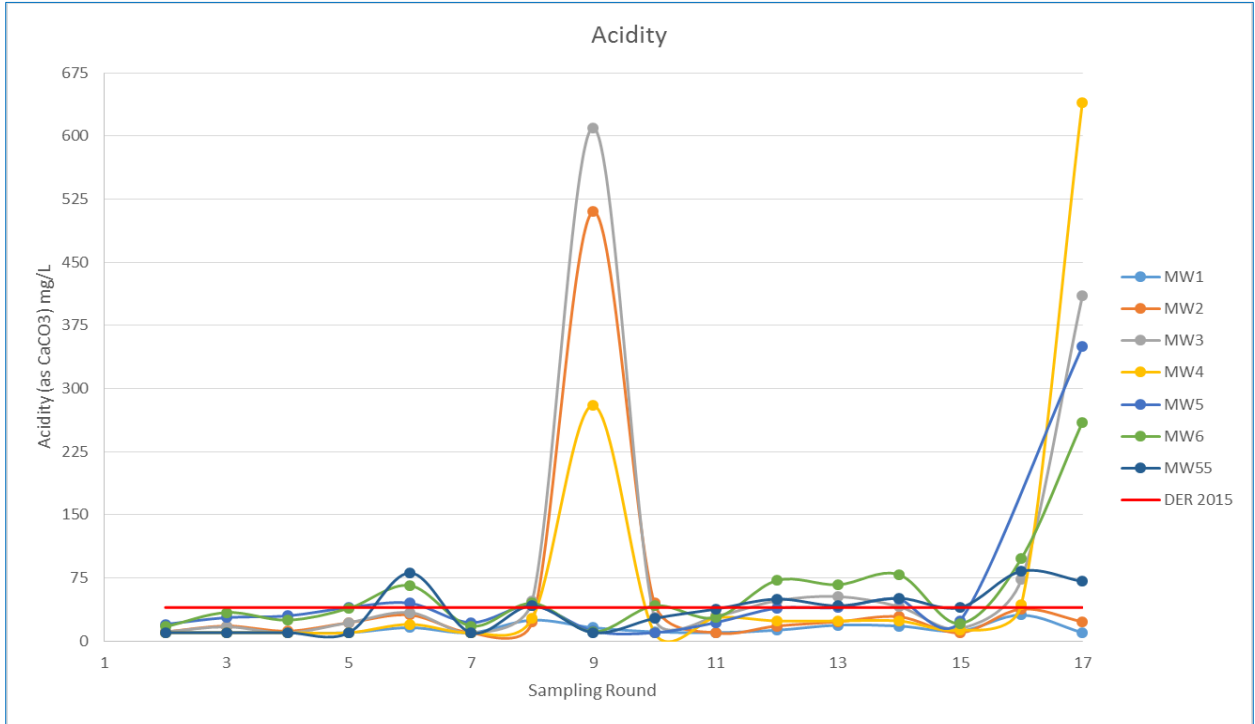
Graph 11: pH concentrations over the sampling period.



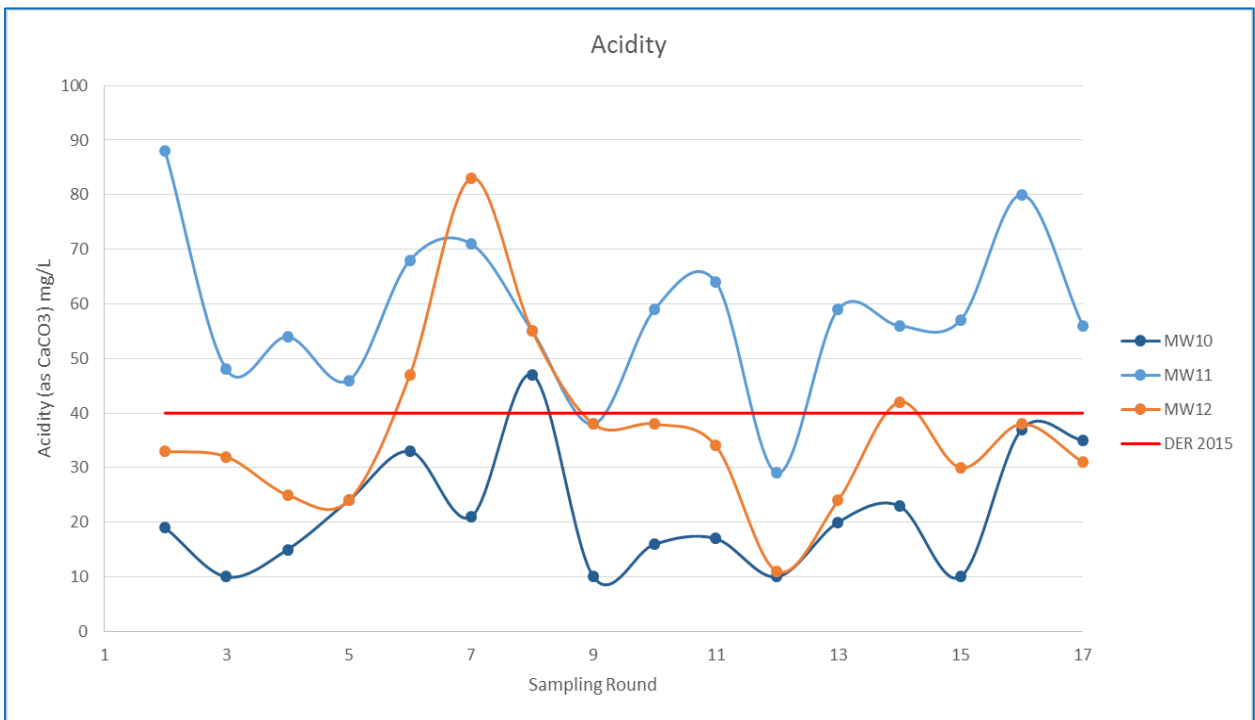
Graph 12: pH concentrations over the sampling period.

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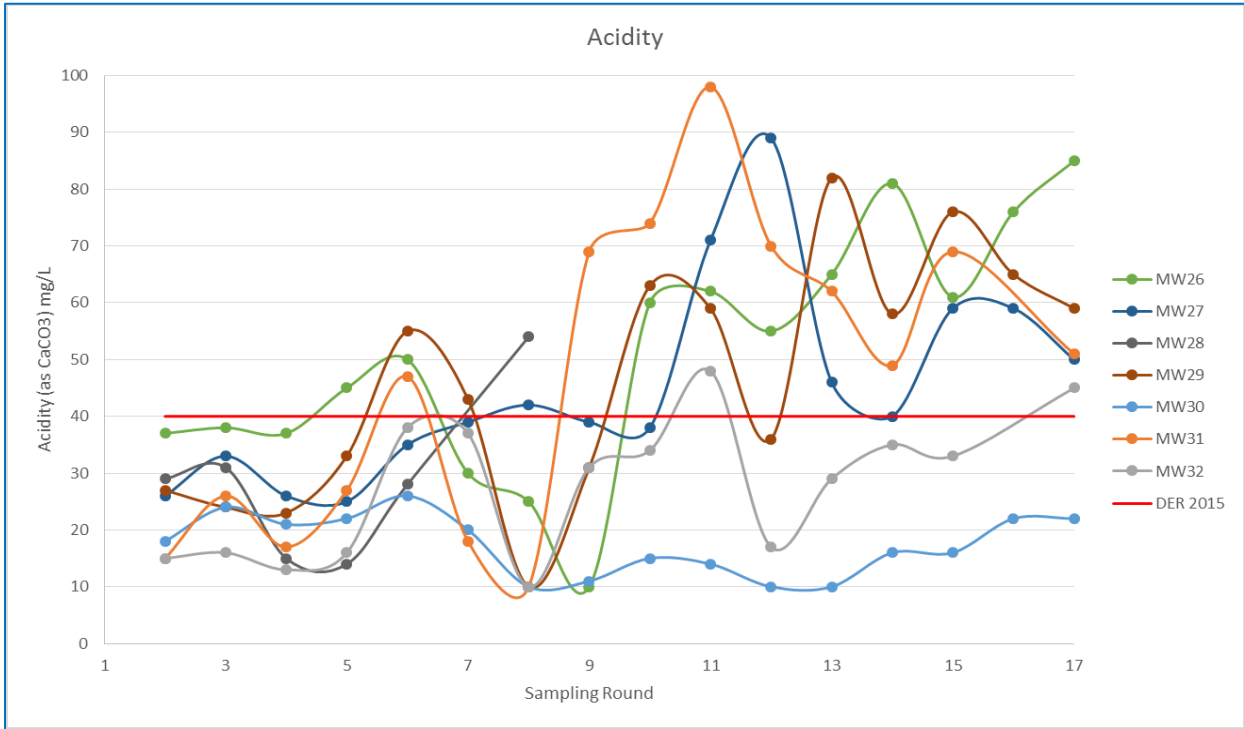
Graph 13: Acidity concentrations over the sampling period.



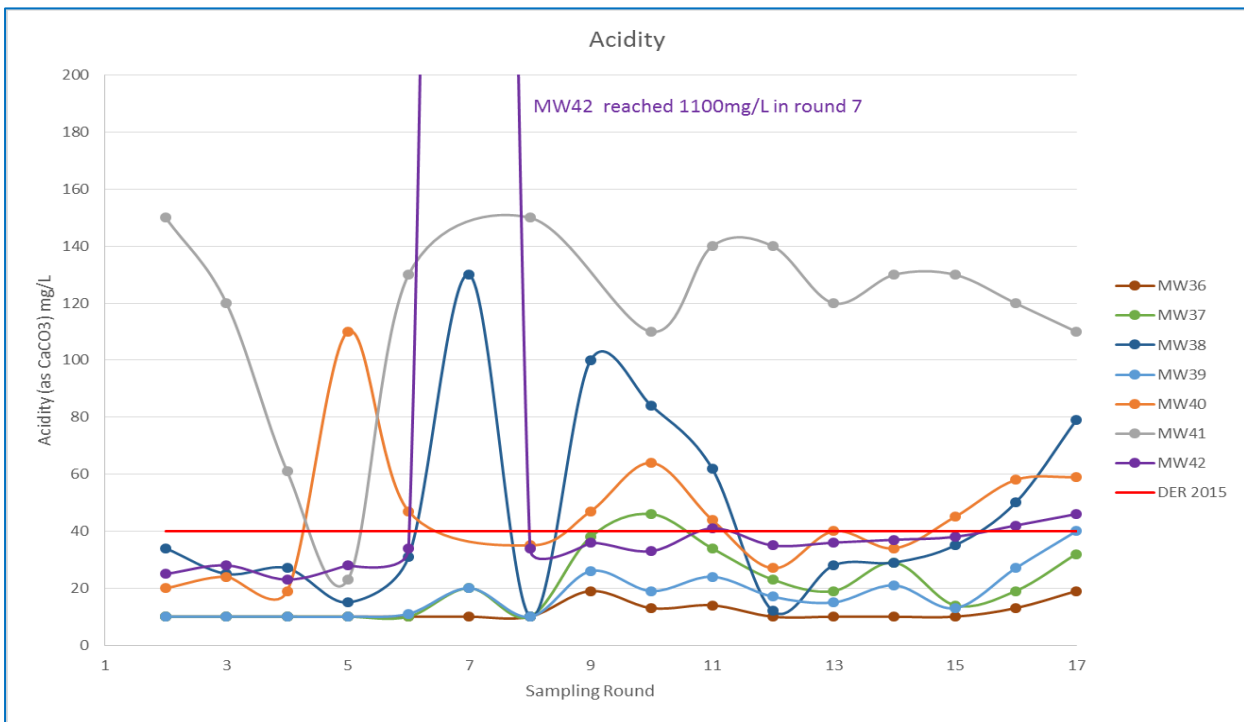
Graph 14: Acidity concentrations over the sampling period.

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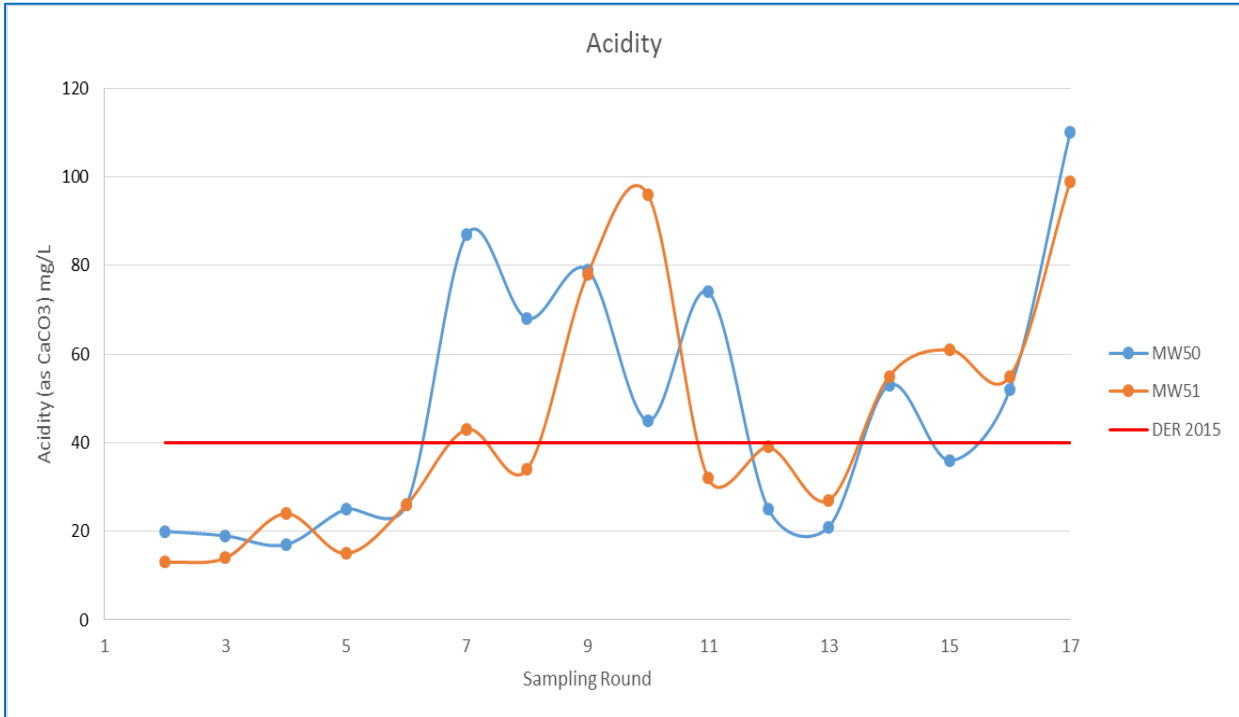
Graph 15: Acidity concentrations over the sampling period.



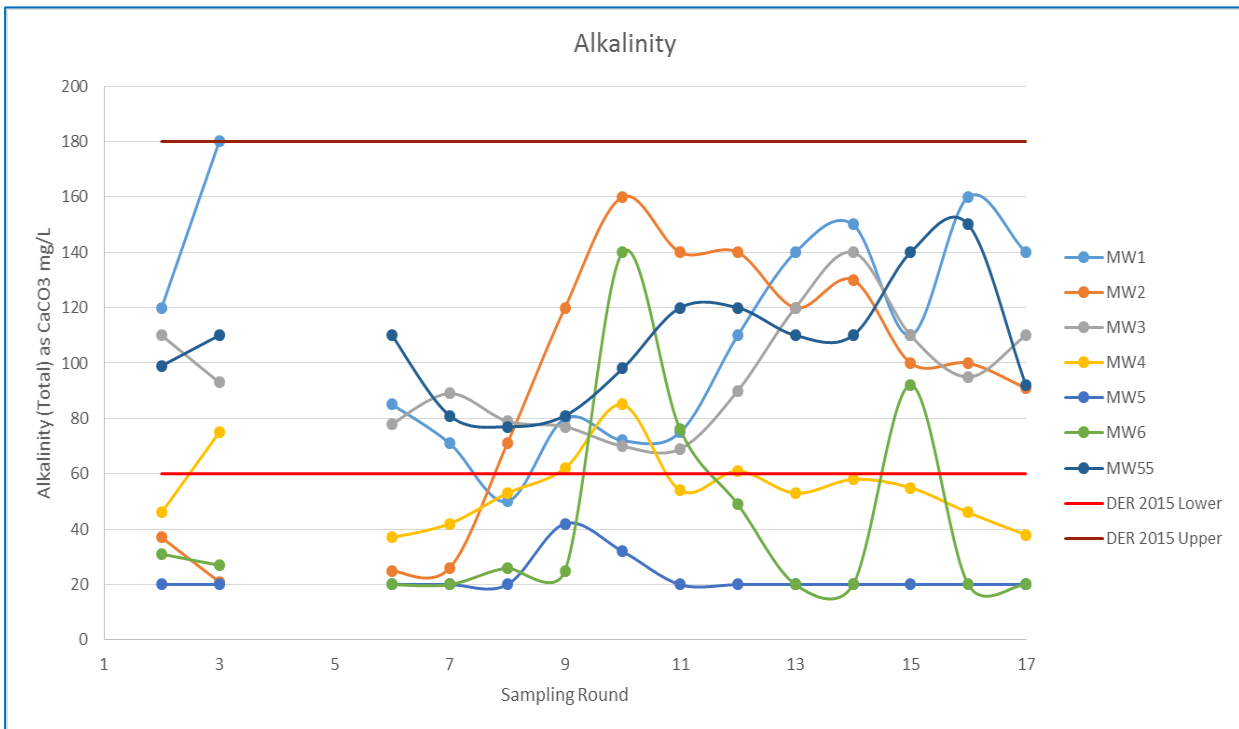
Graph 16: Acidity concentrations over the sampling period.

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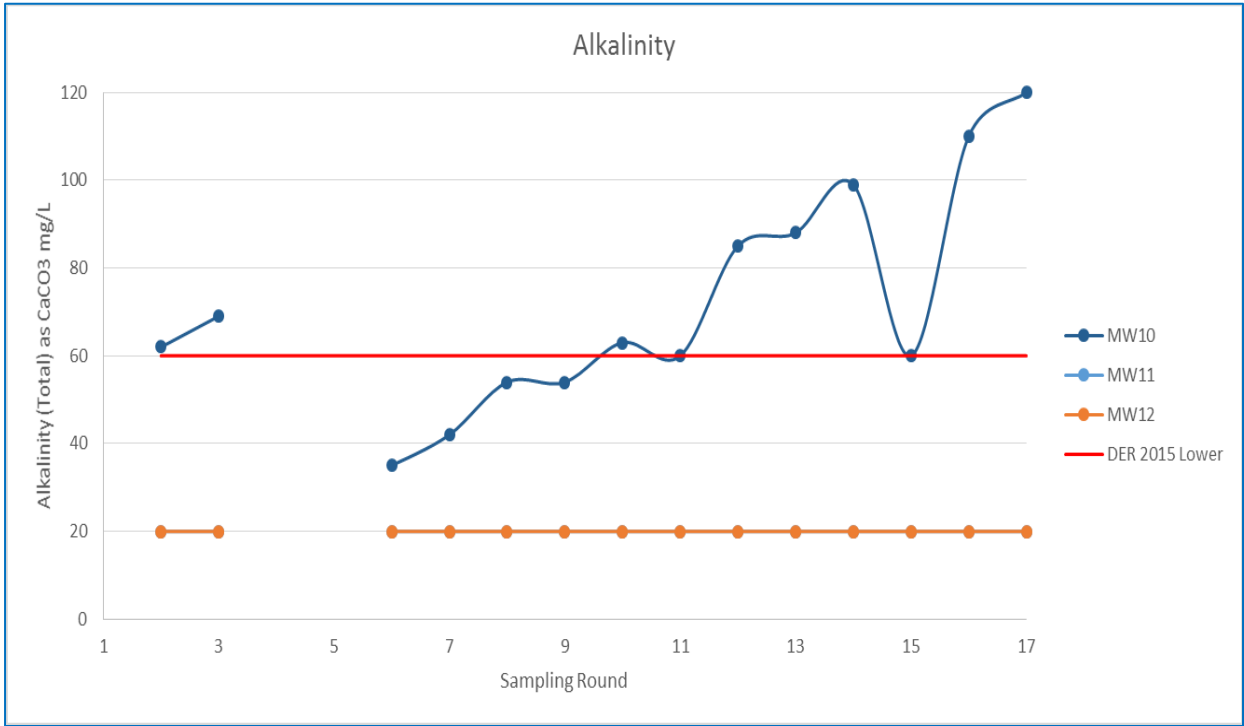
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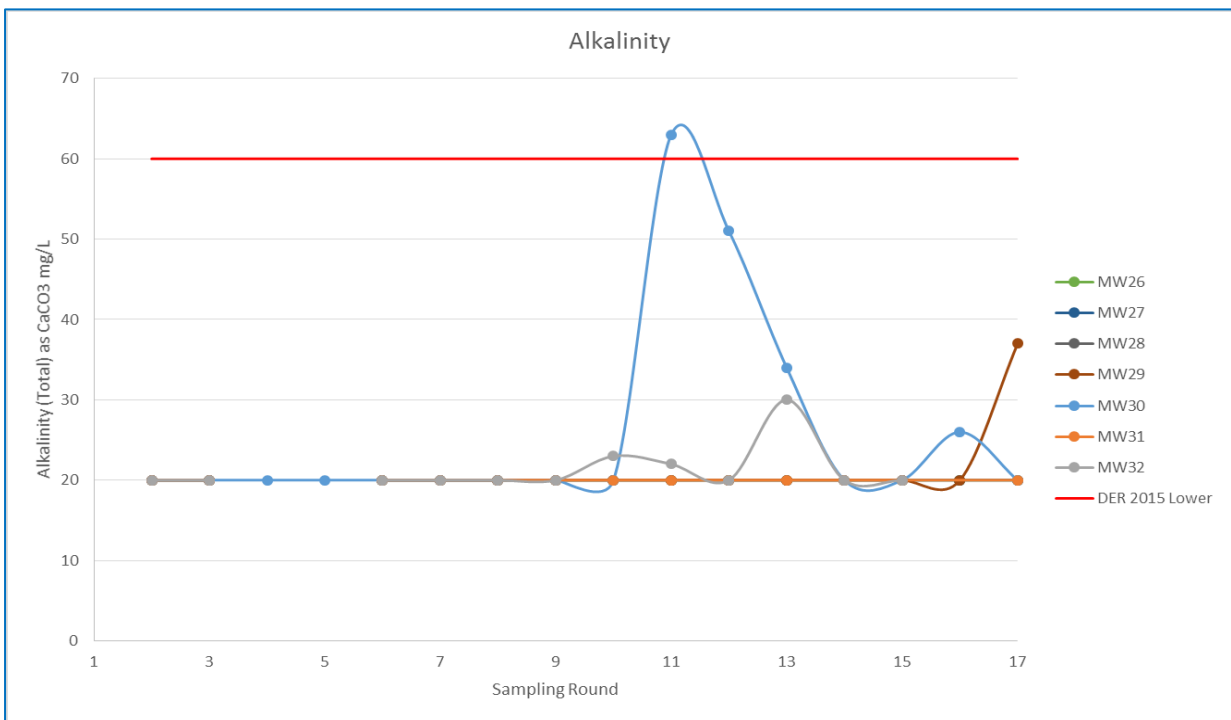
Graph 17: Acidity concentrations over the sampling period.



Graph 18: Alkalinity concentrations over the sampling period.



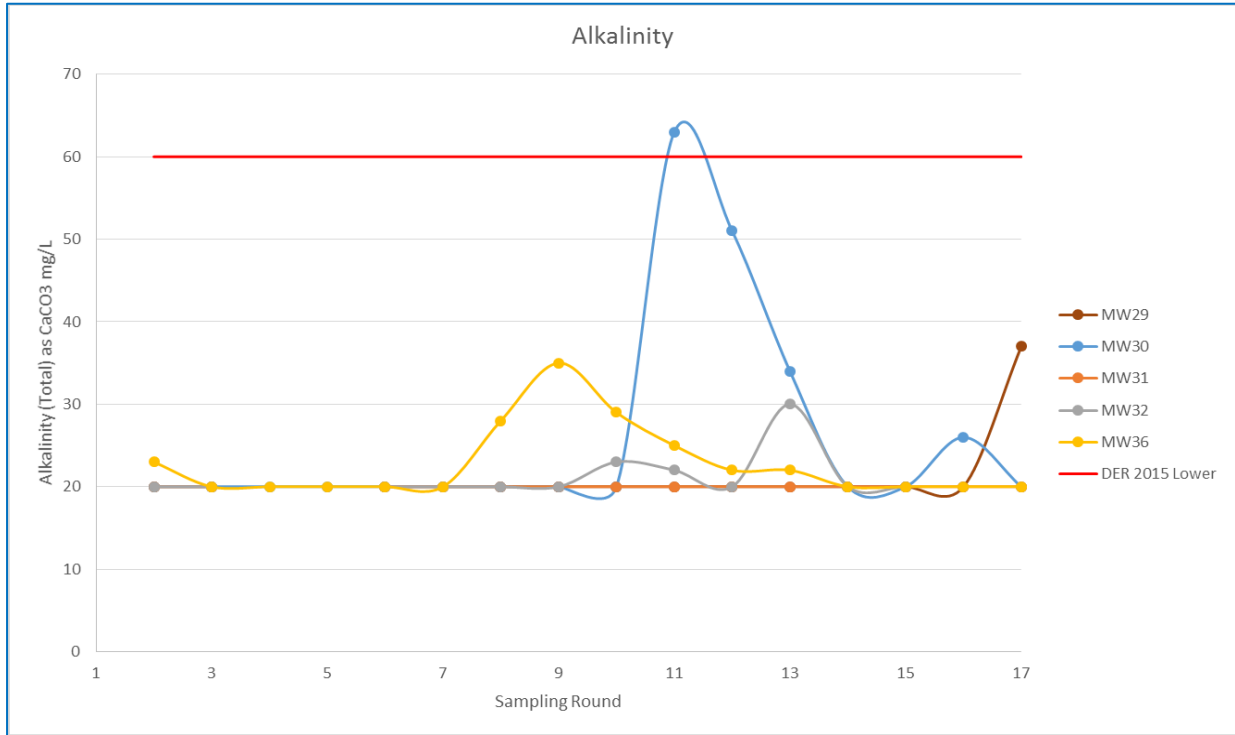
Graph 19: Alkalinity concentrations over the sampling period.



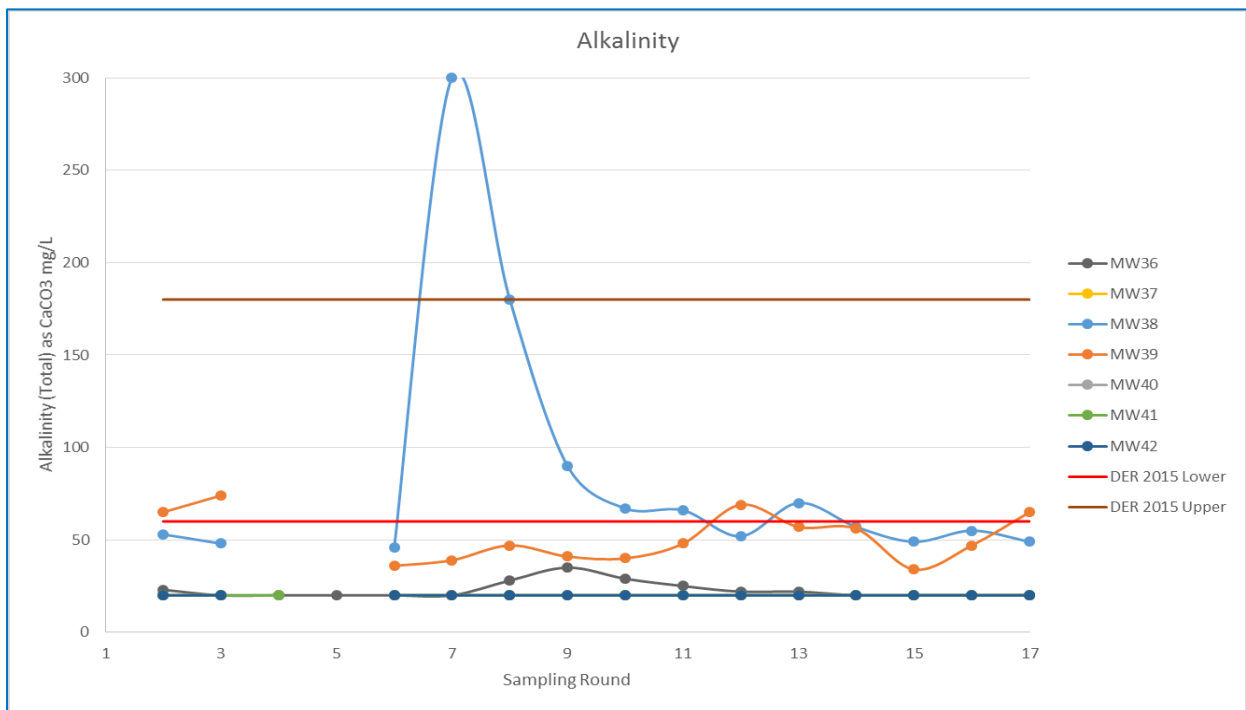
Graph 20: Alkalinity concentrations over the sampling period.

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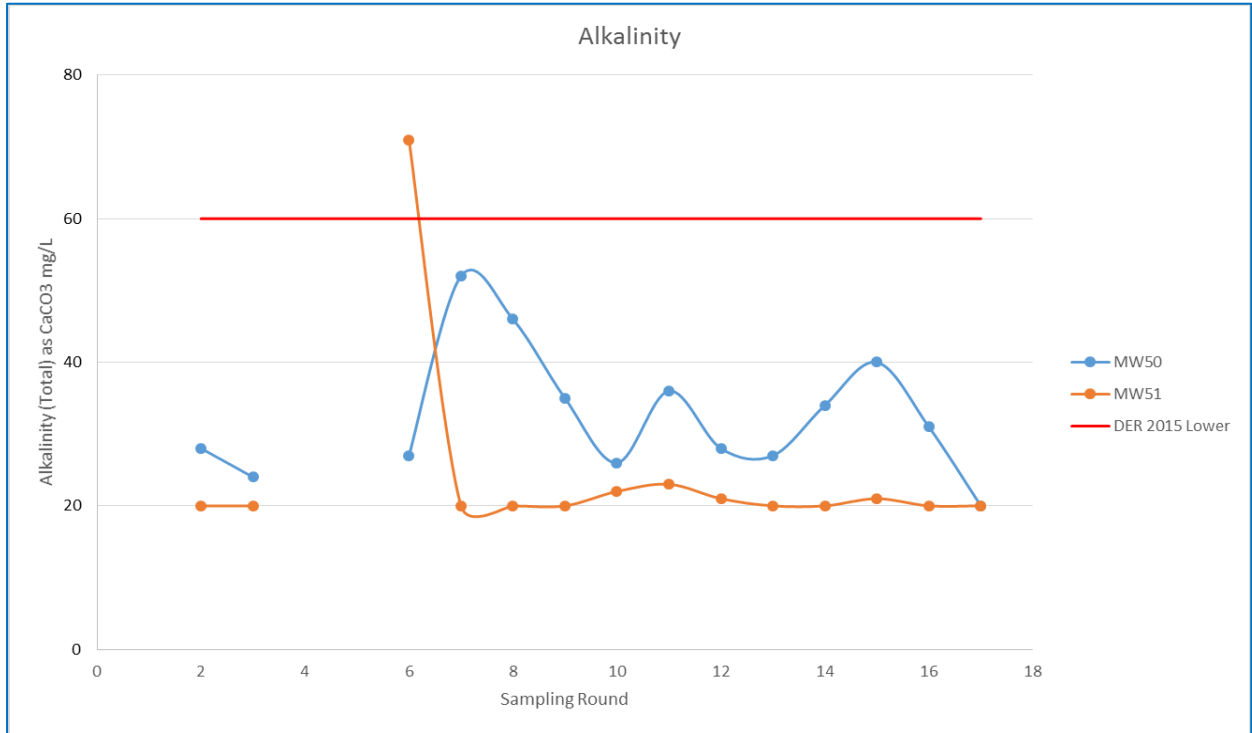
Graph 21: Alkalinity concentrations over the sampling period.



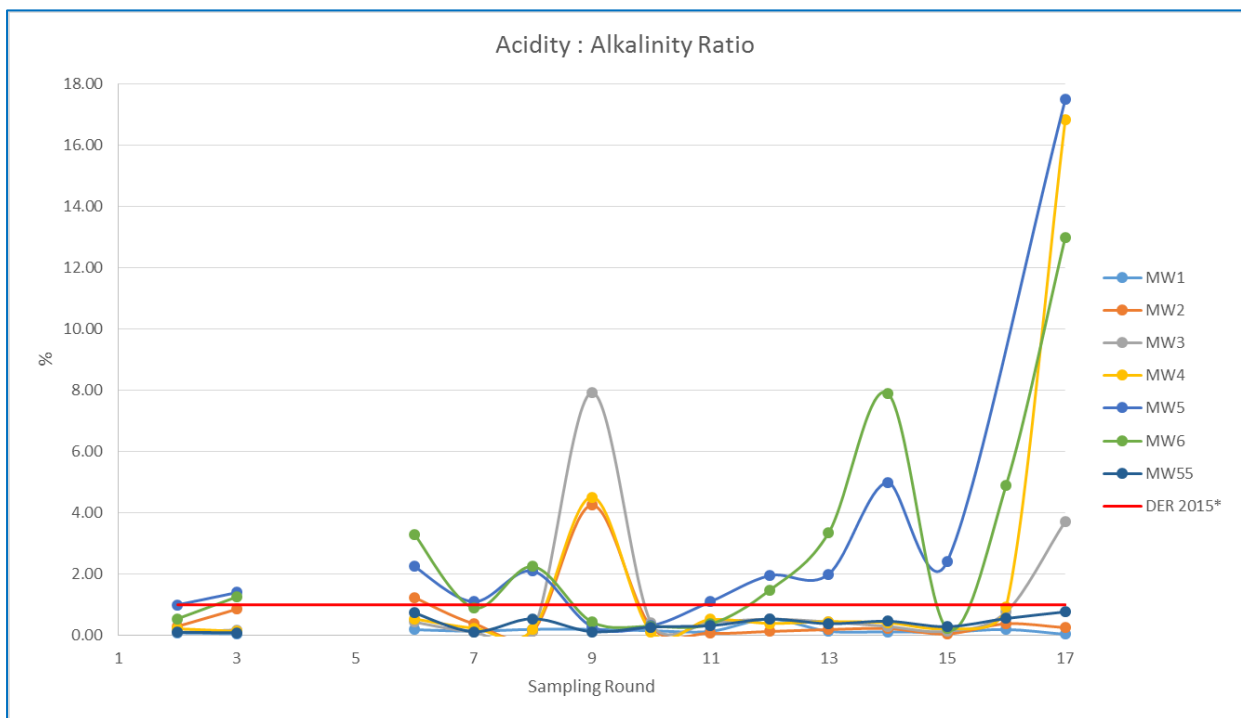
Graph 22: Alkalinity concentrations over the sampling period.

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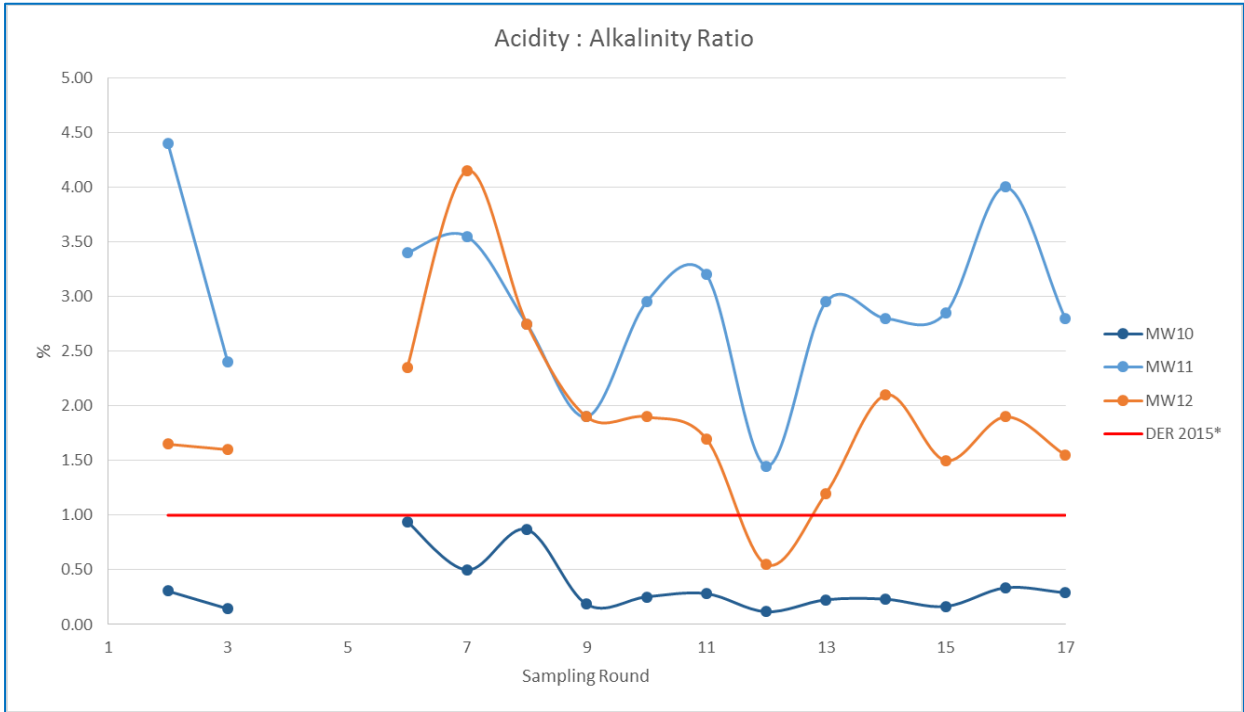
Graph 23: Alkalinity concentrations over the sampling period.



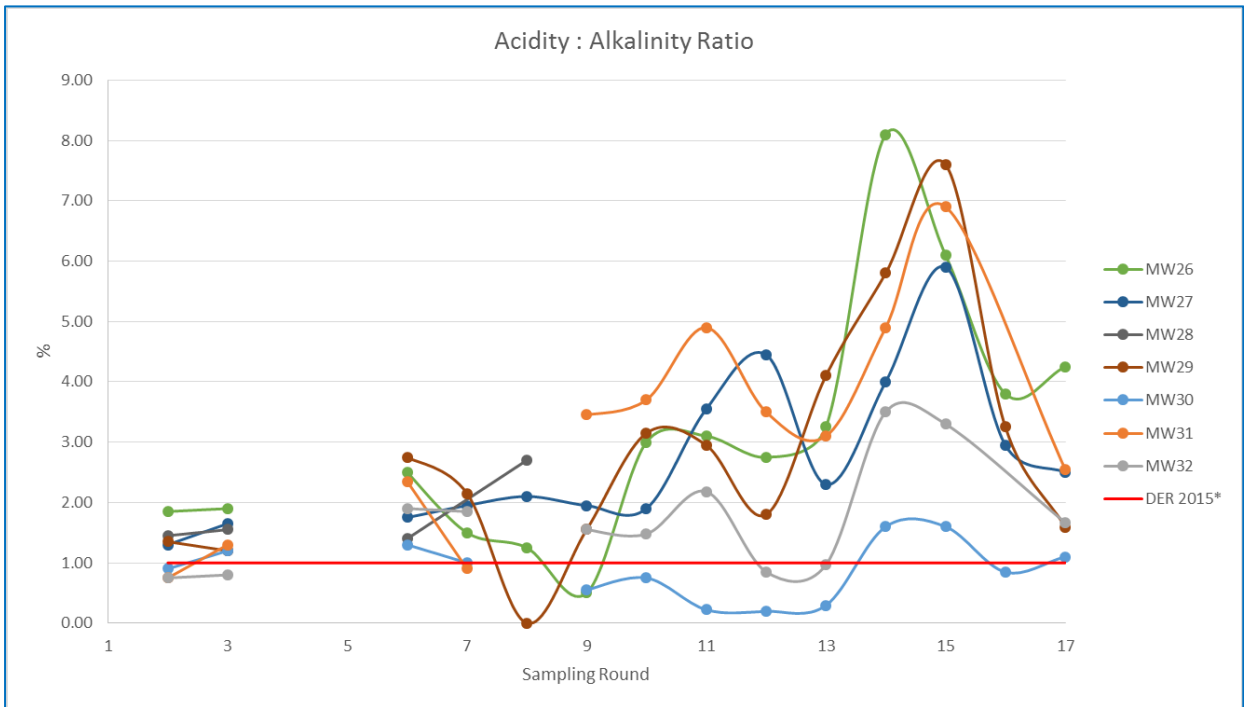
Graph 24: Acidity: Alkalinity ratio over the sampling period.

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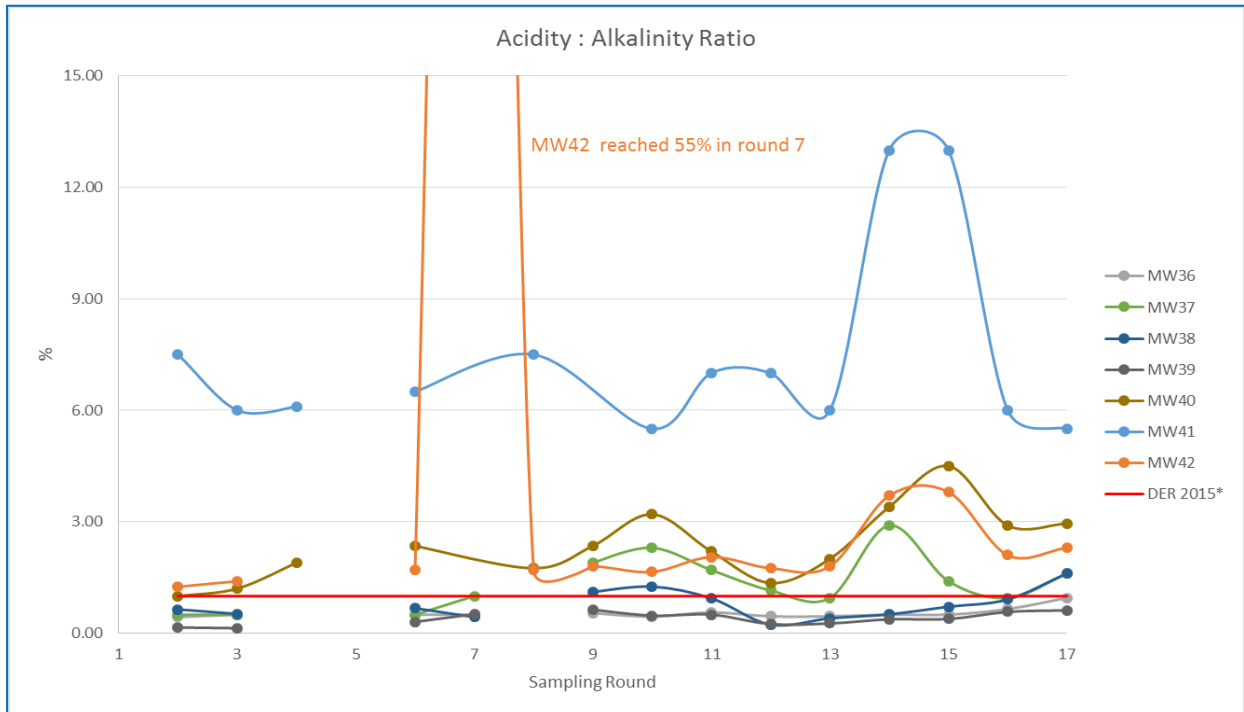
Graph 25: Acidity: Alkalinity ratio over the sampling period.



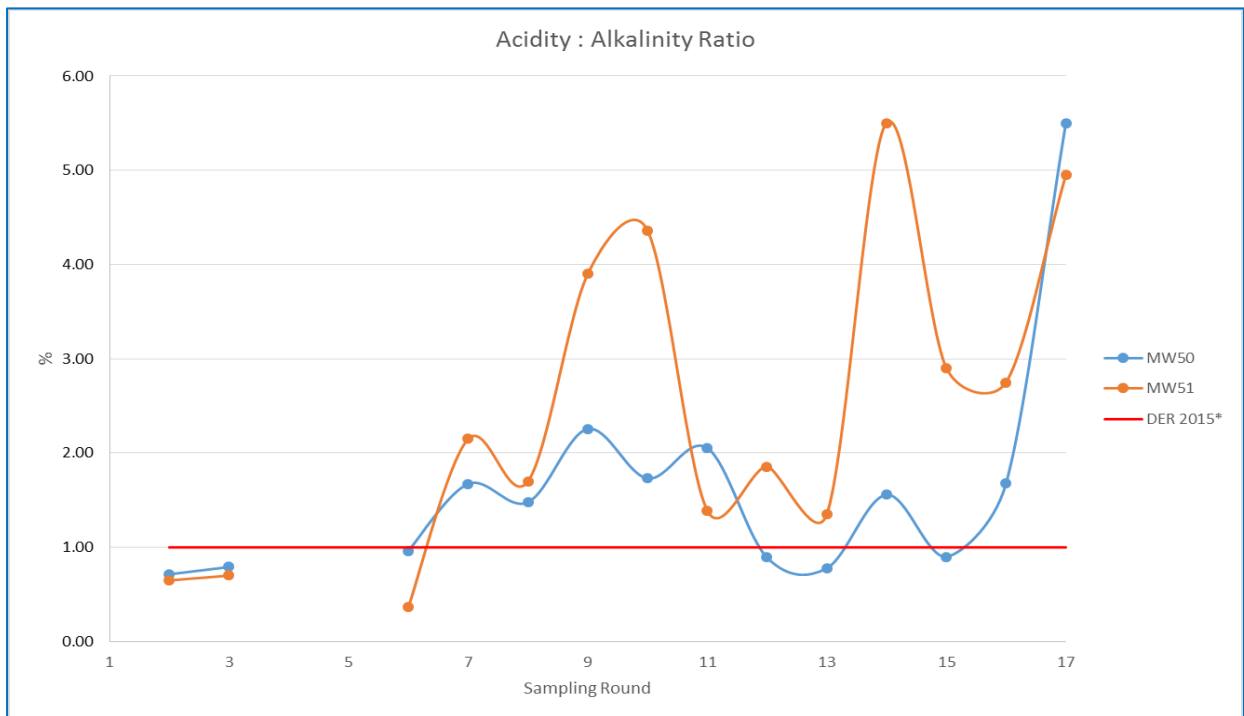
Graph 26: Acidity: Alkalinity ratio over the sampling period.

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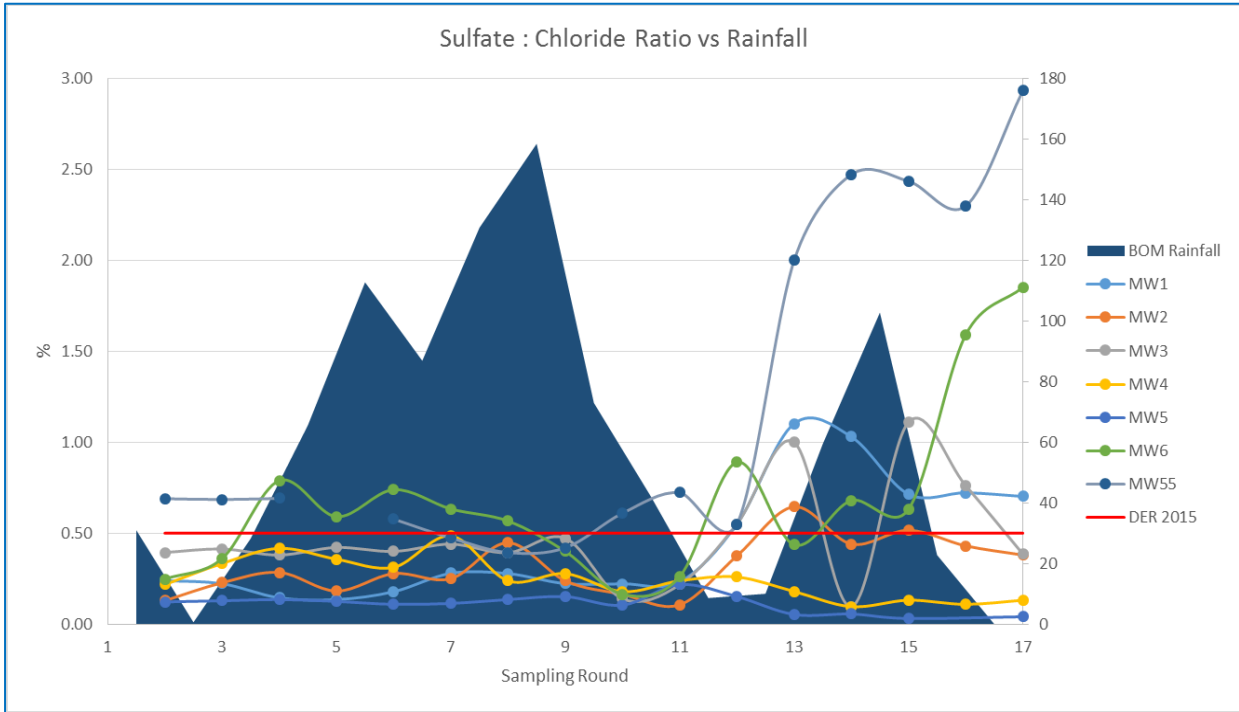
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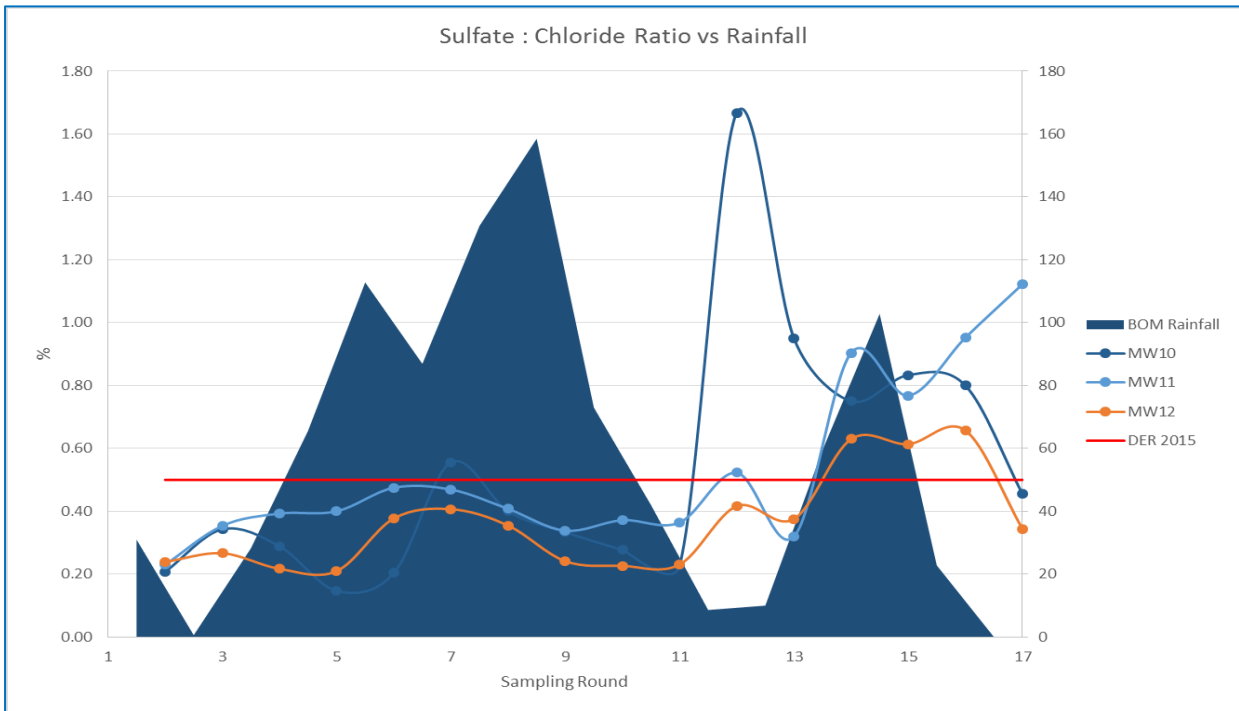
Graph 27: Acidity: Alkalinity ratio over the sampling period.



Graph 28: Acidity: Alkalinity ratio over the sampling period.



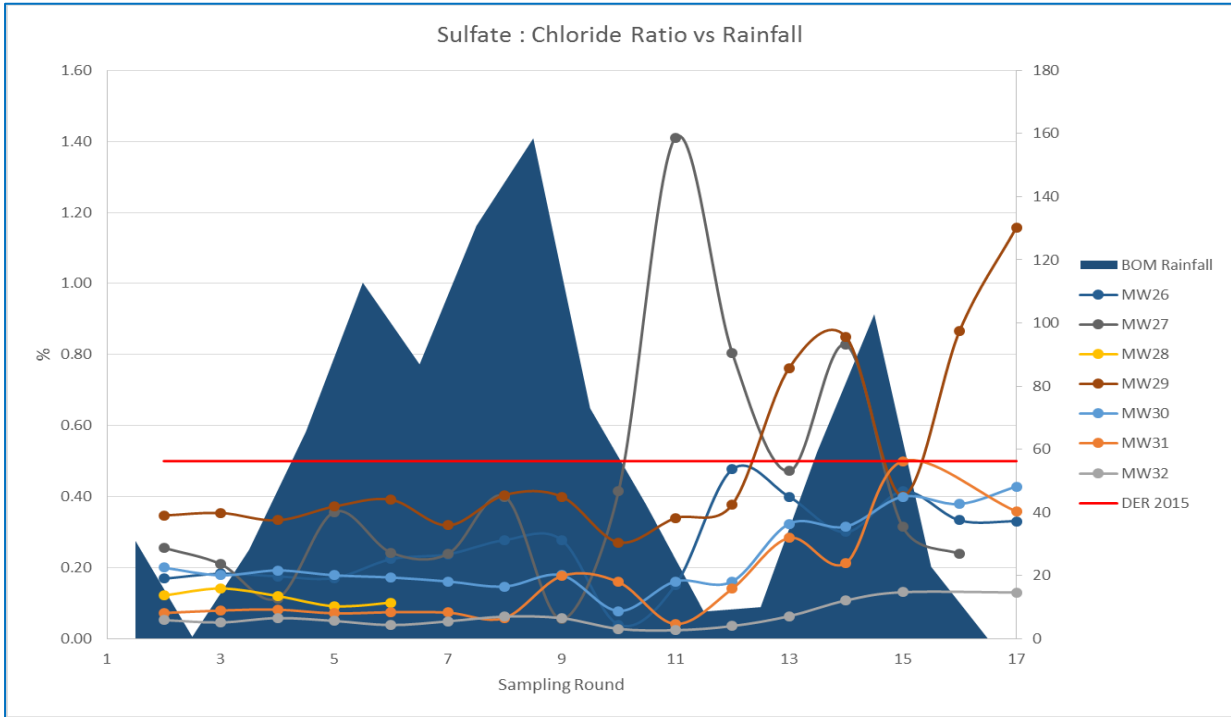
Graph 29: Sulfate: chloride ratio over the sampling period, affected by rainfall.



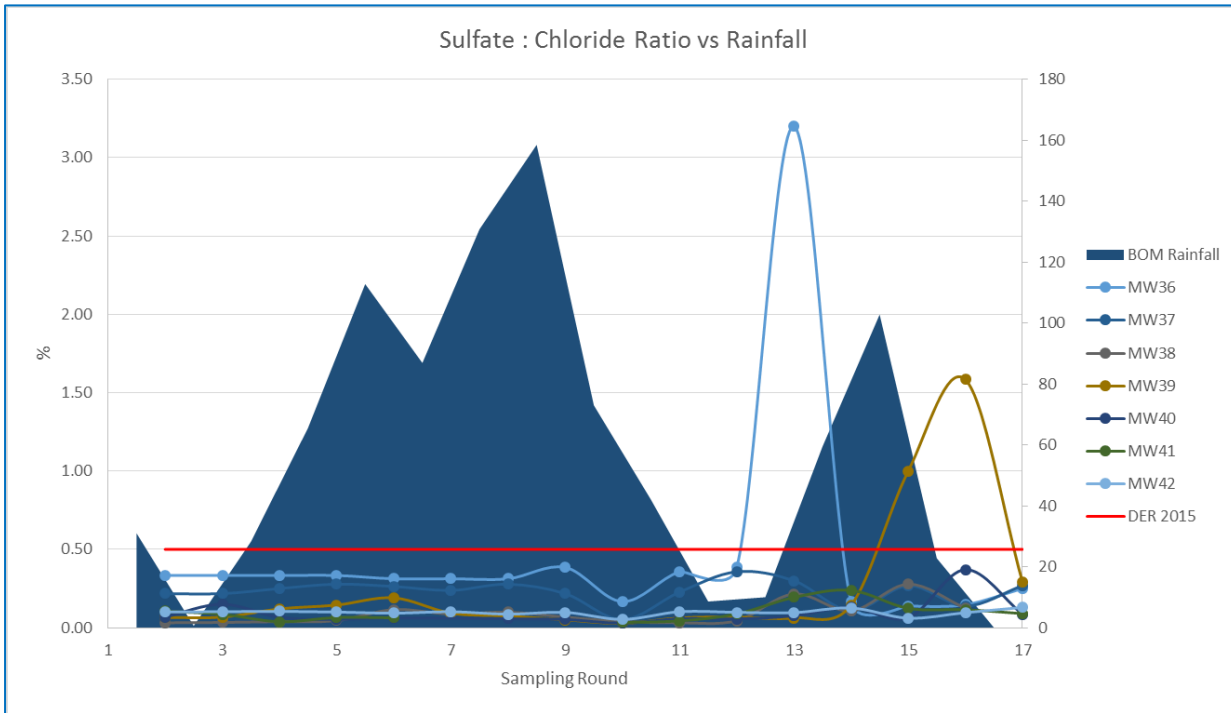
Graph 30: Sulfate: chloride ratio over the sampling period, affected by rainfall.

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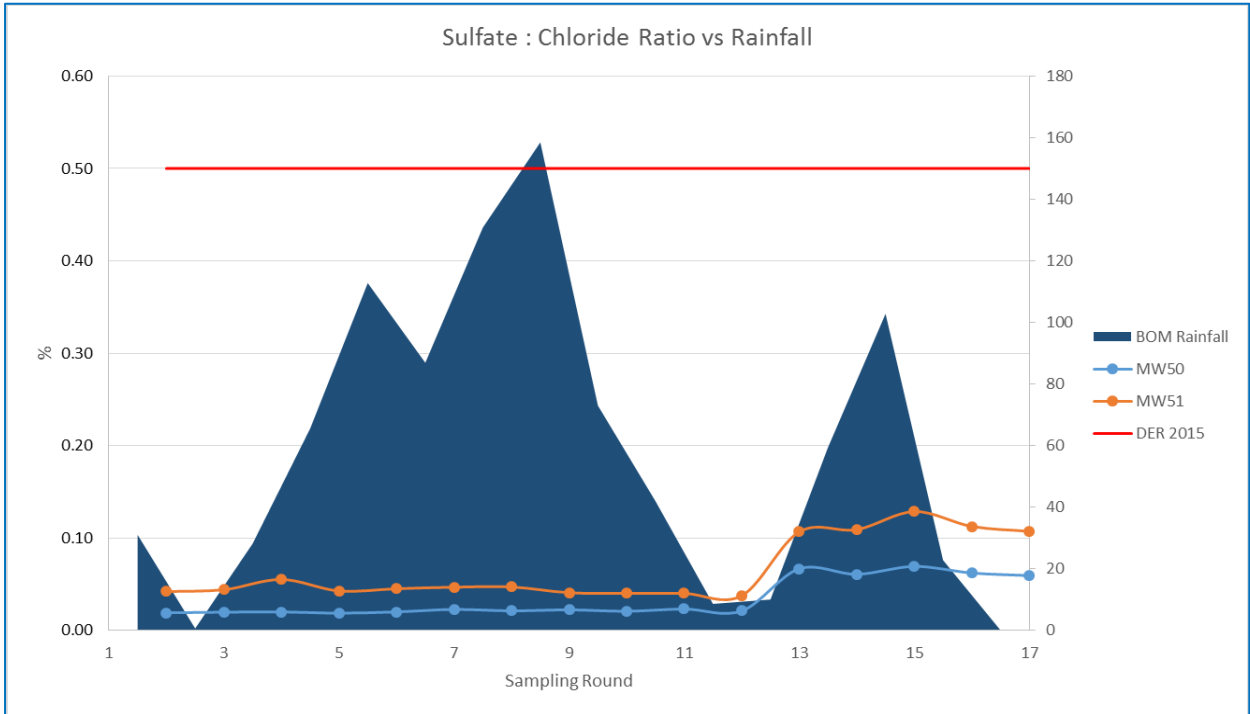
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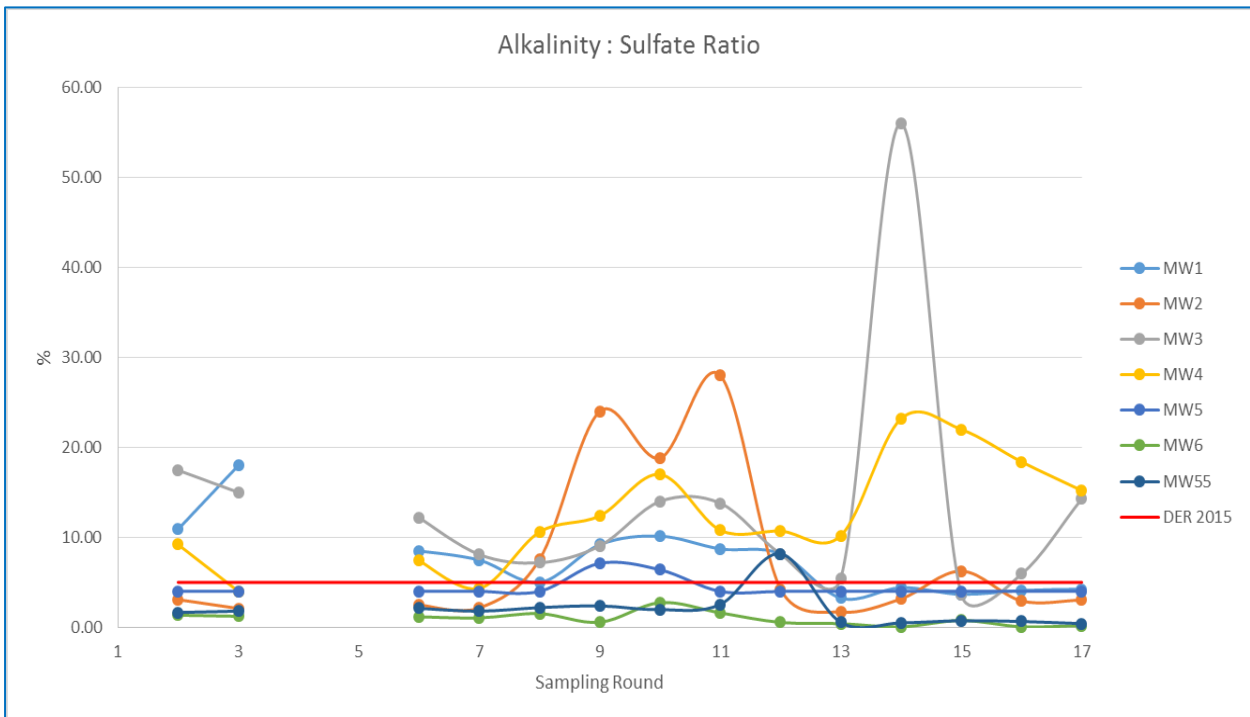
Graph 31: Sulfate: chloride ratio over the sampling period, affected by rainfall.



Graph 32: Sulfate: chloride ratio over the sampling period, affected by rainfall.



Graph 33: Sulfate: chloride ratio over the sampling period, affected by rainfall.

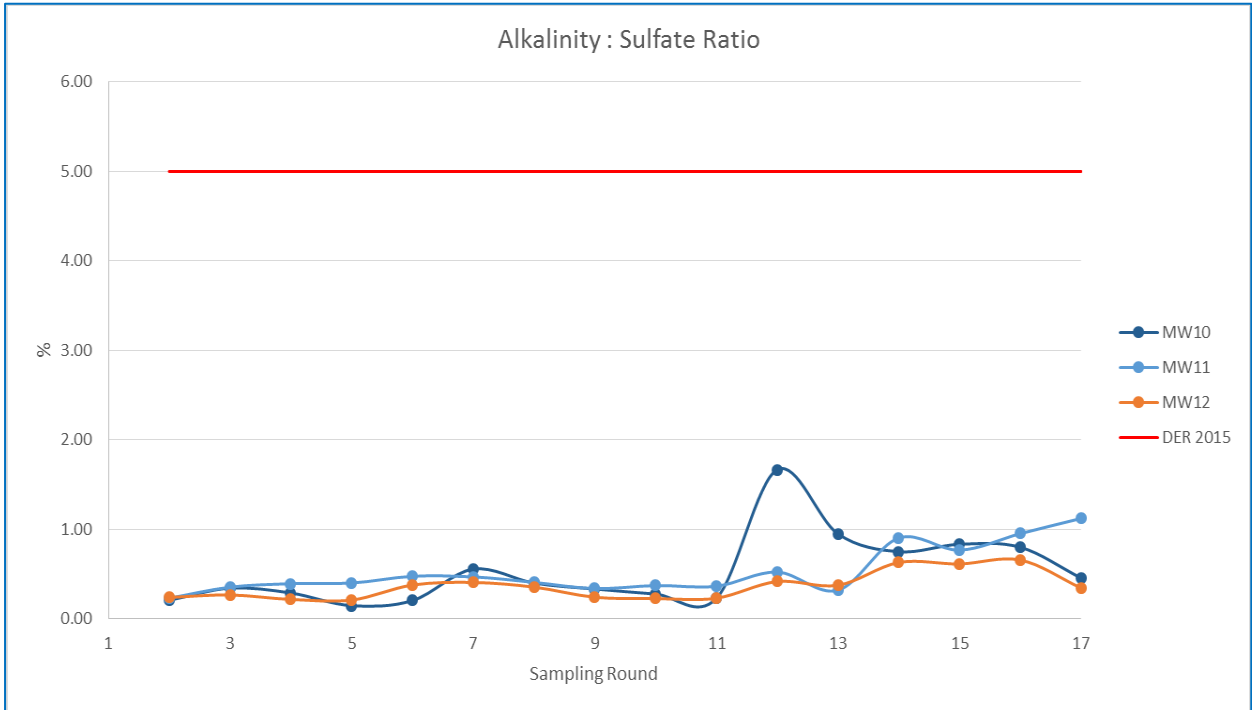


Graph 34: Alkalinity: sulfate ratio over the sampling period.

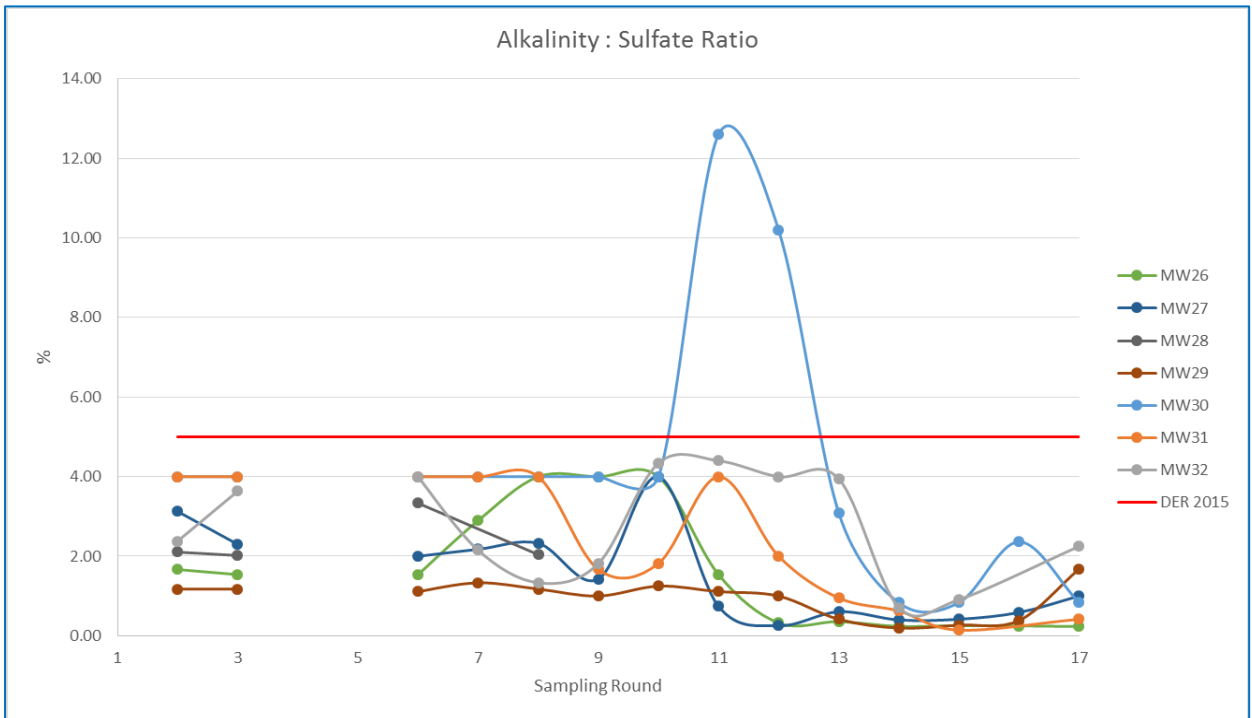
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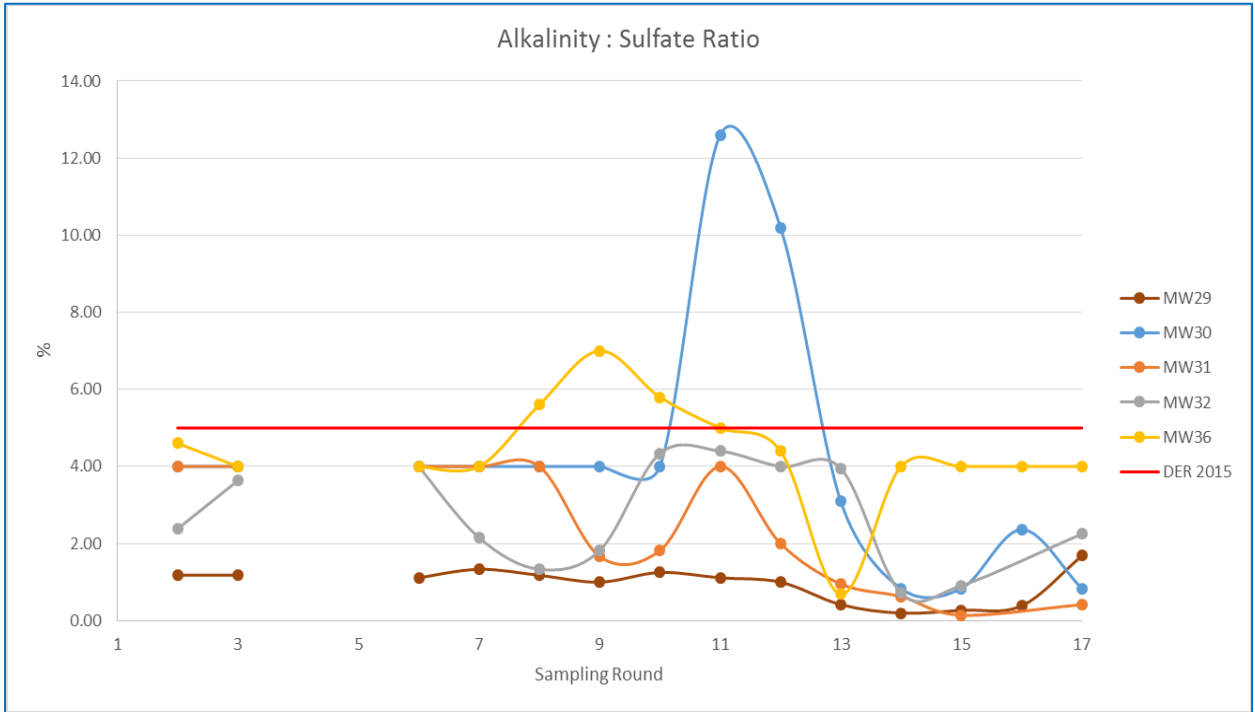
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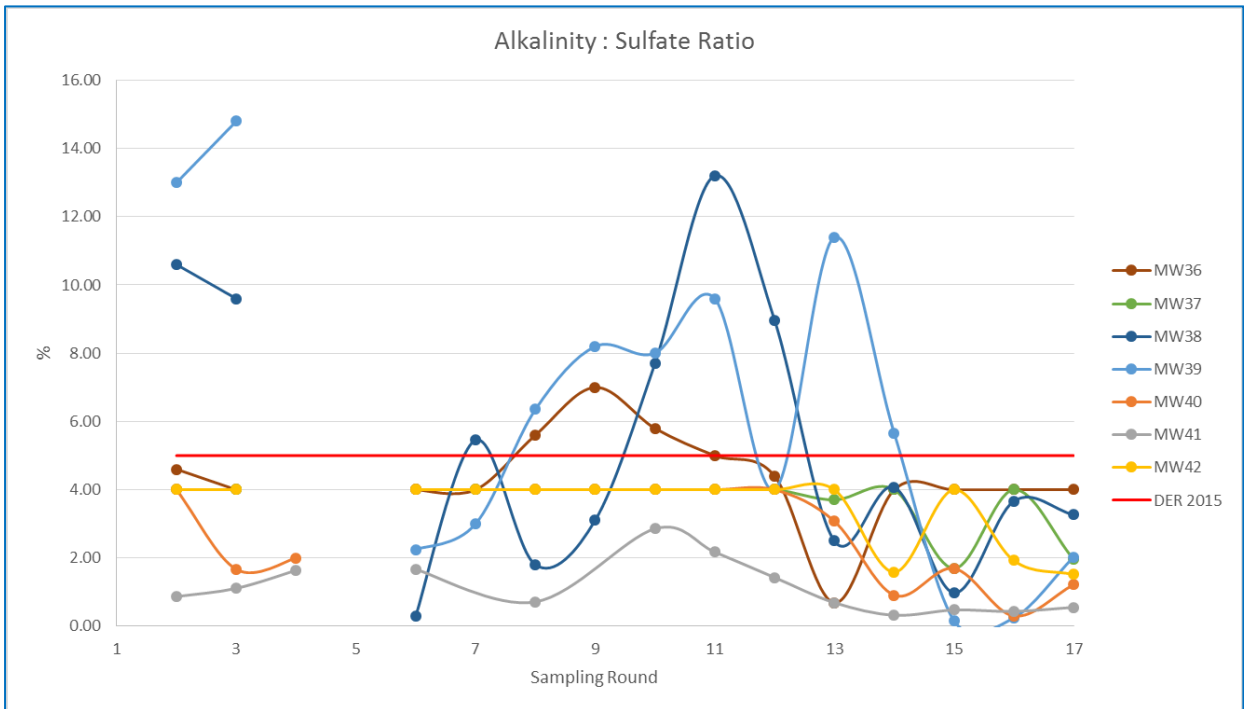
Graph 35: Alkalinity: sulfate ratio over the sampling period.



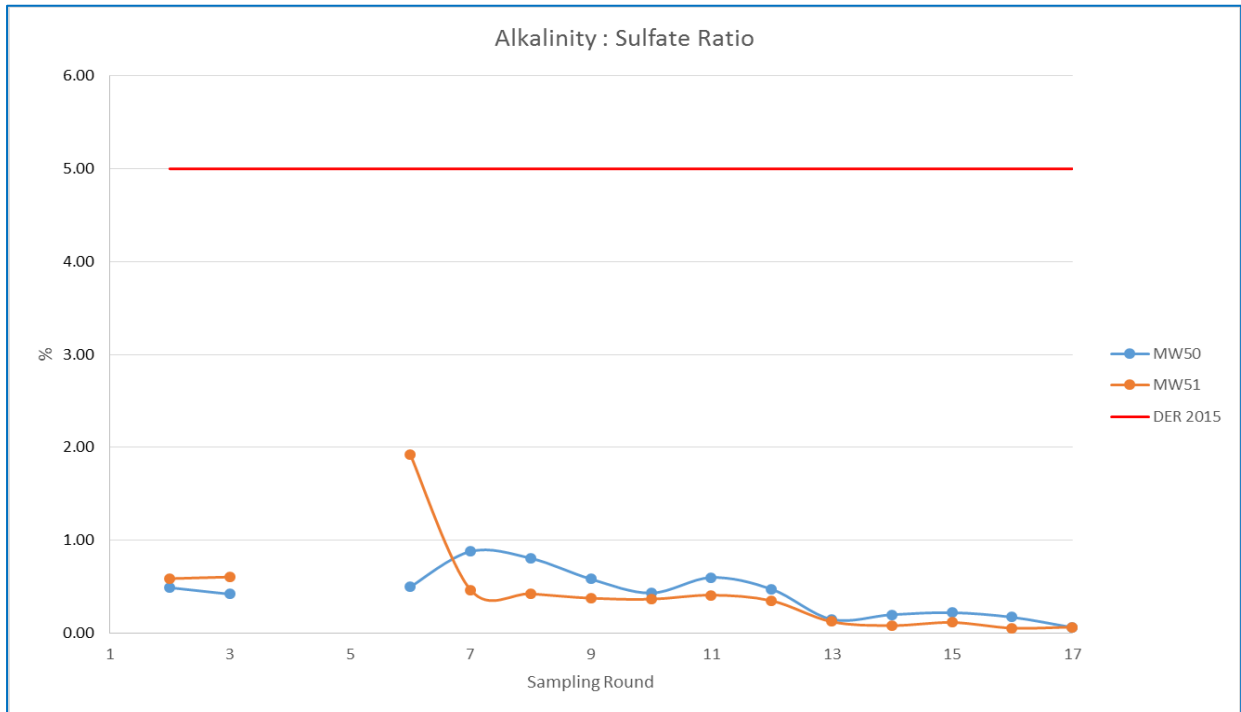
Graph 36: Alkalinity: sulfate ratio over the sampling period.



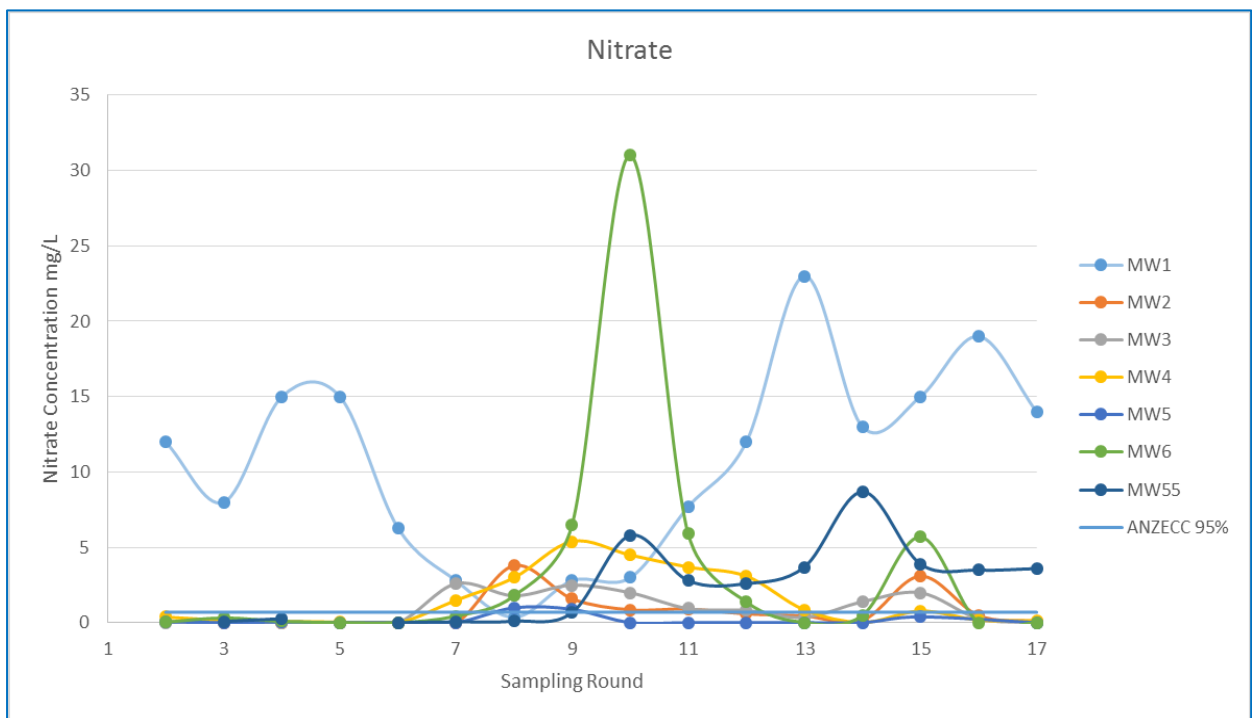
Graph 37: Alkalinity: sulfate ratio over the sampling period.



Graph 38: Alkalinity: sulfate ratio over the sampling period.



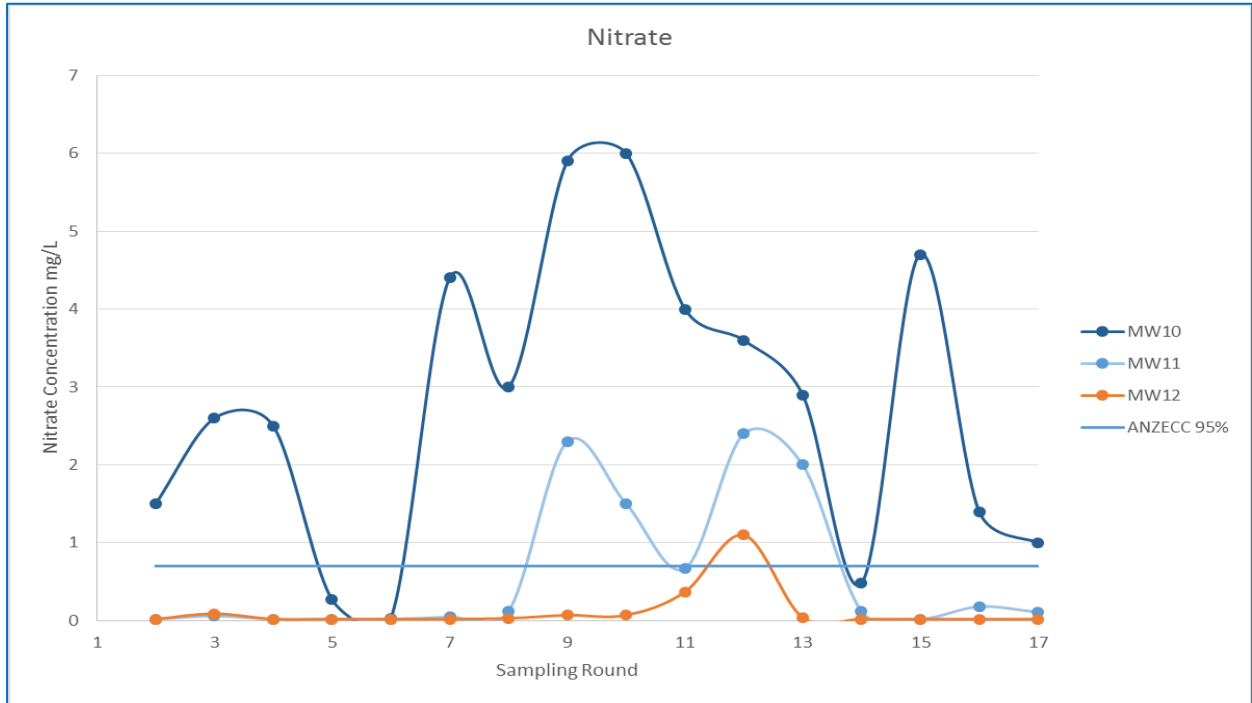
Graph 39: Alkalinity: sulfate ratio over the sampling period.



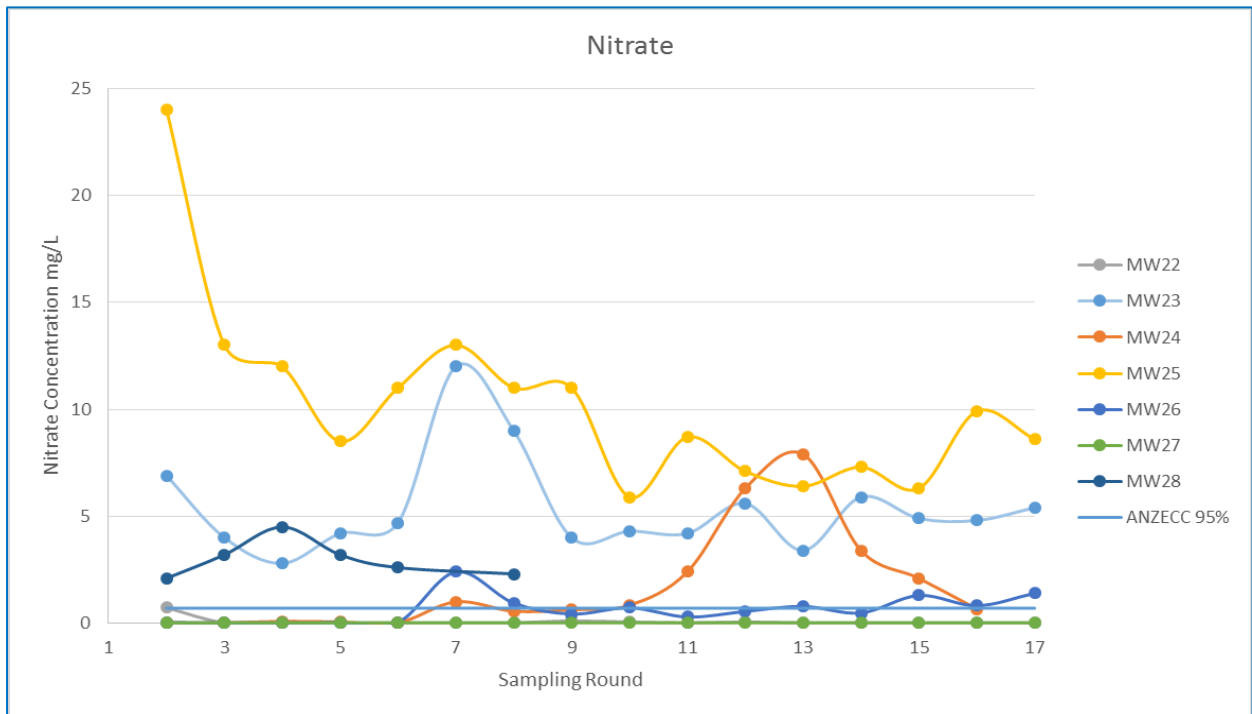
Graph 40: Nitrate concentrations over the sampling period.

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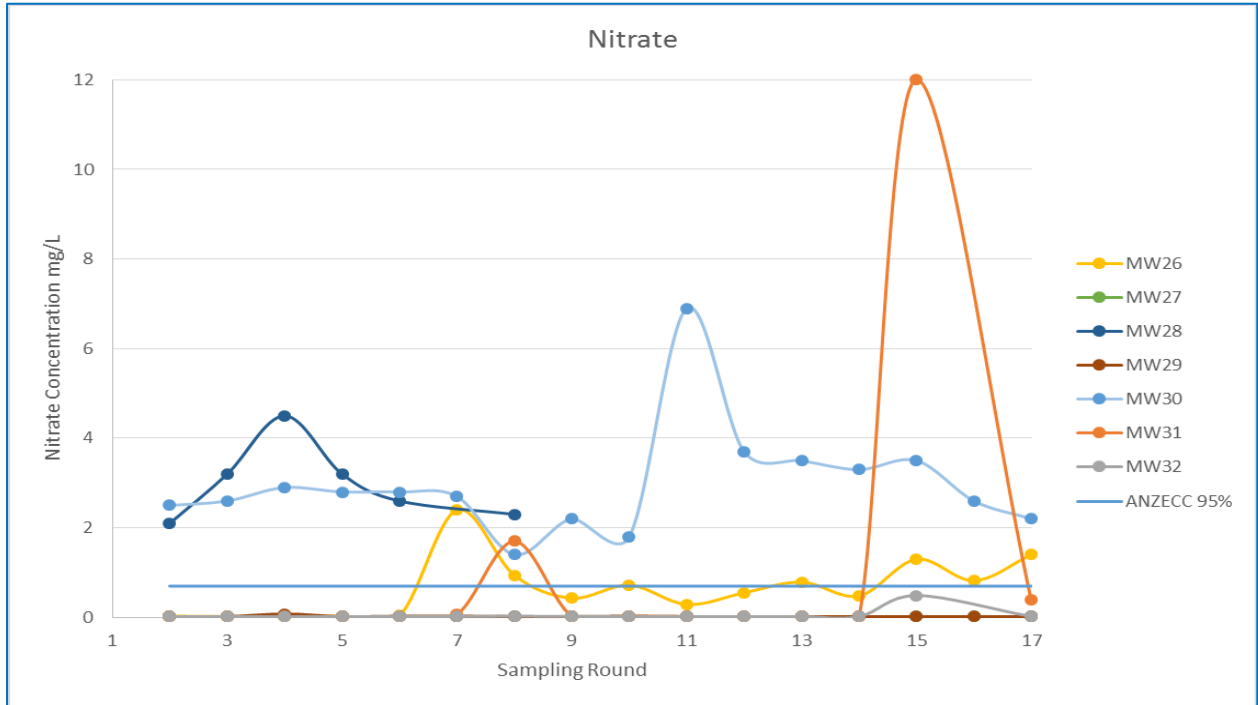
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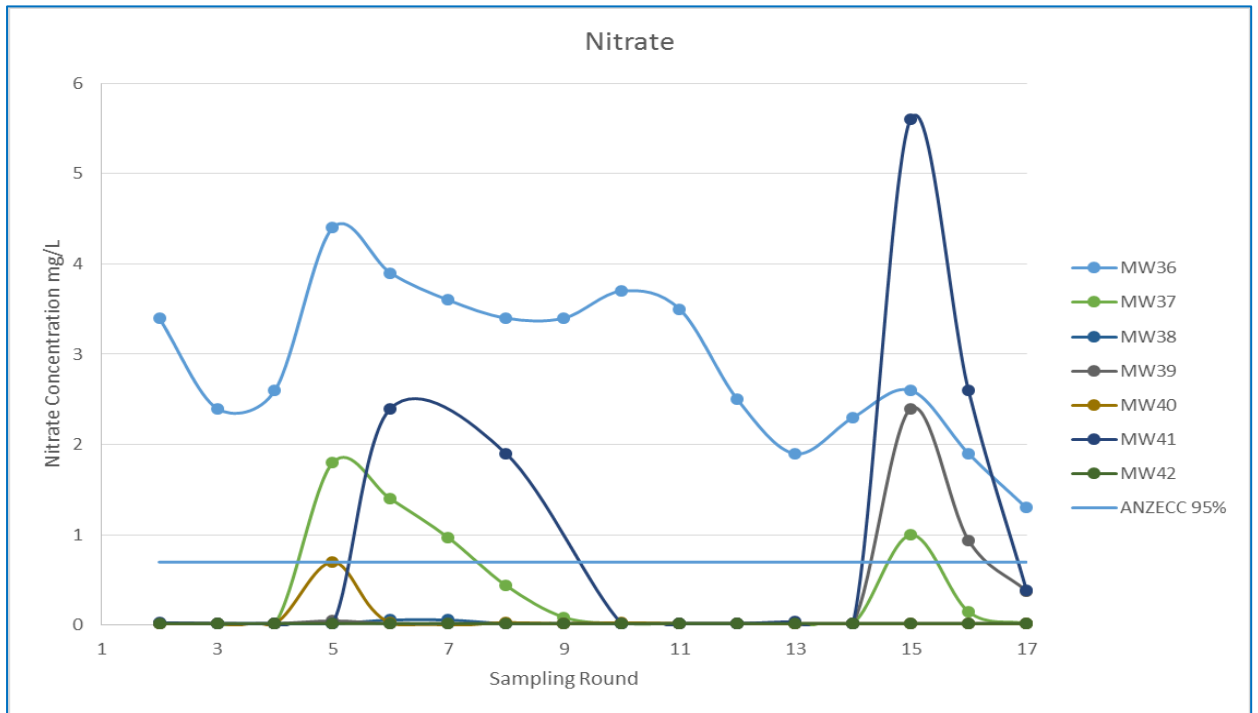
Graph 41: Nitrate concentrations over the sampling period.



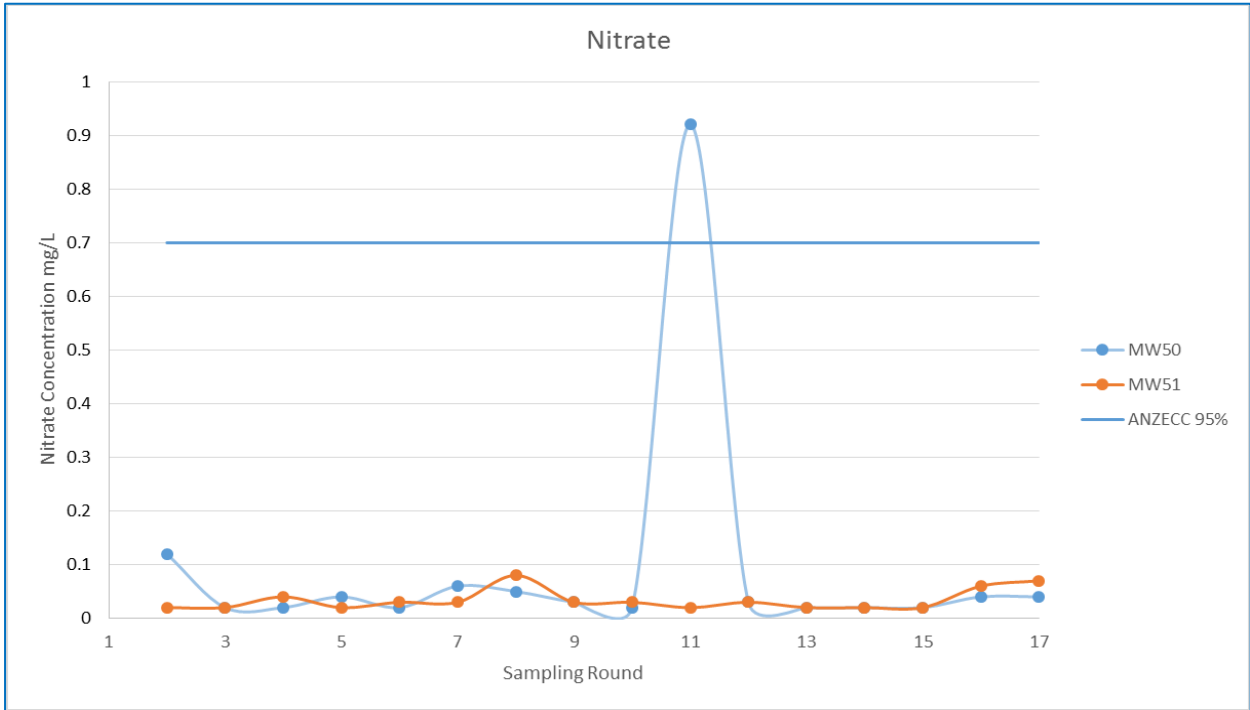
Graph 42: Nitrate concentrations over the sampling period.



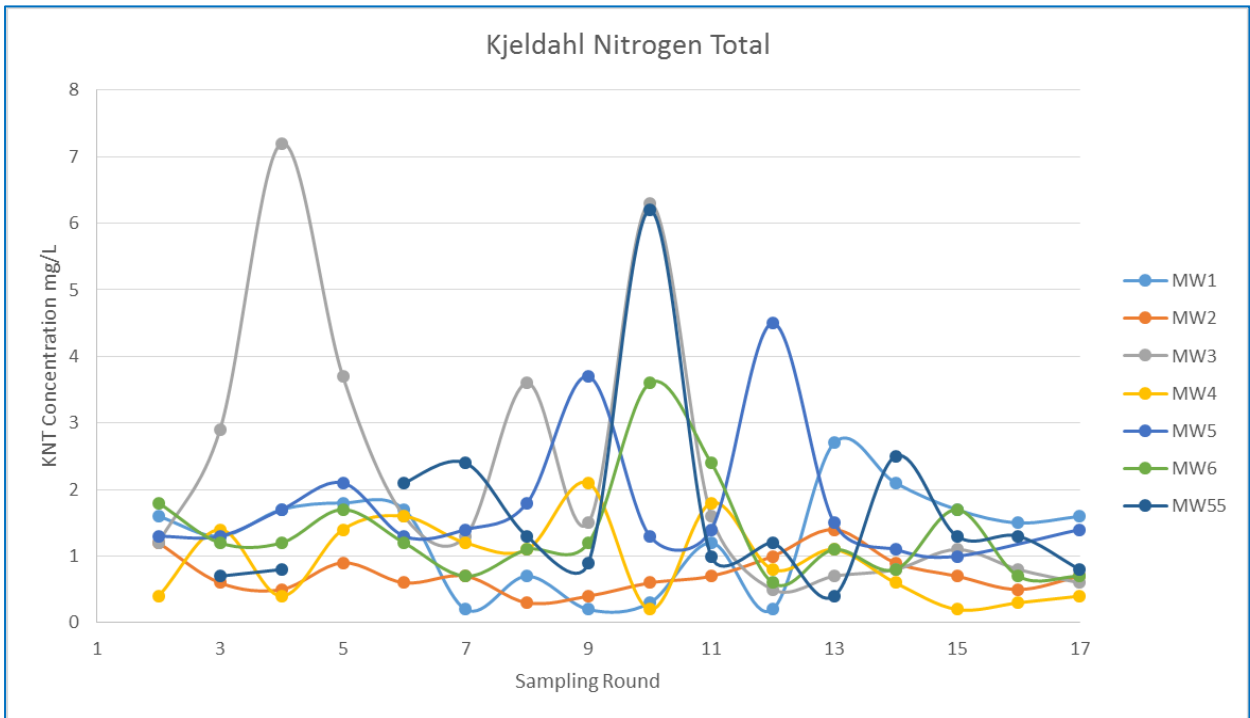
Graph 43: Nitrate concentrations over the sampling period.



Graph 44: Nitrate concentrations over the sampling period.



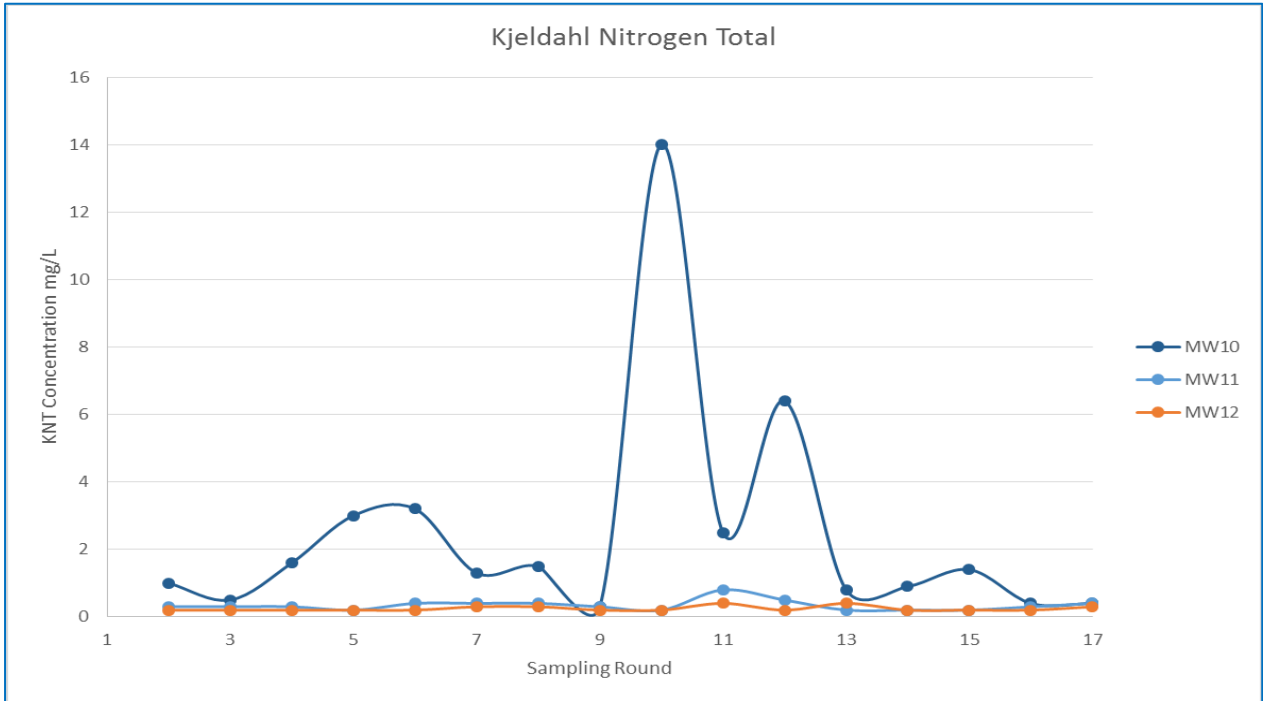
Graph 45: Nitrate concentrations over the sampling period.



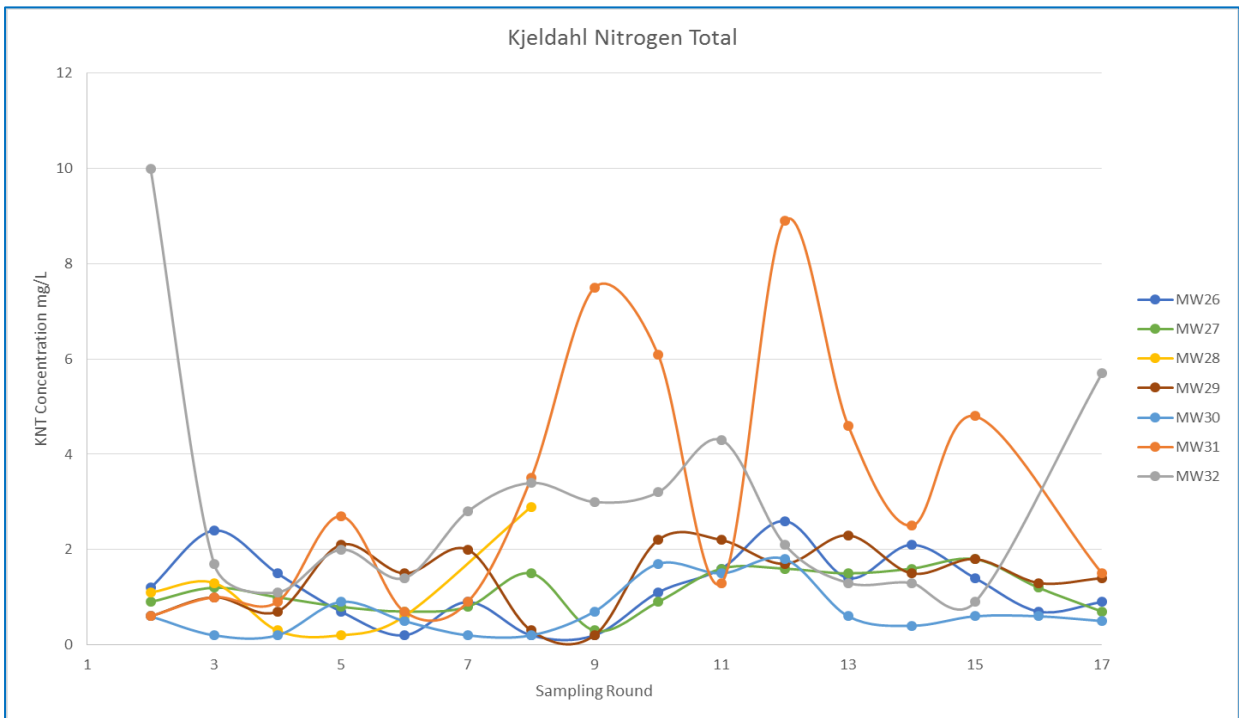
Graph 46: Kjeldahl nitrogen total concentrations over the sampling period.

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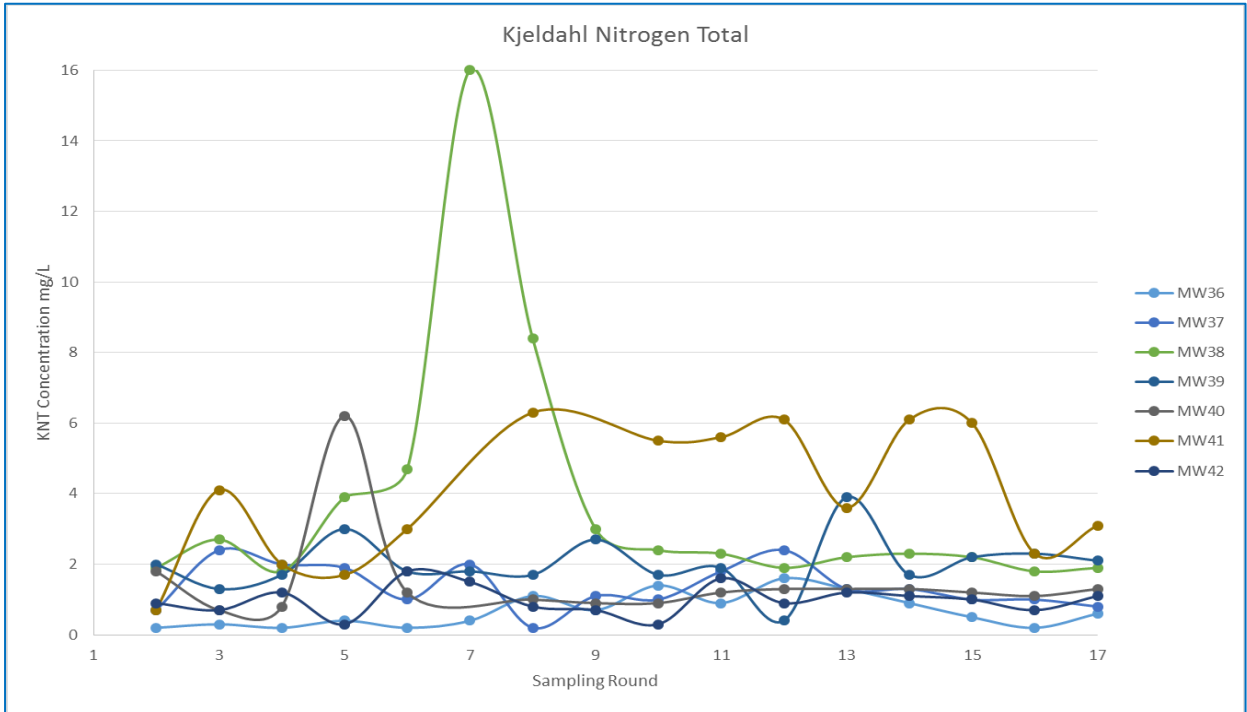
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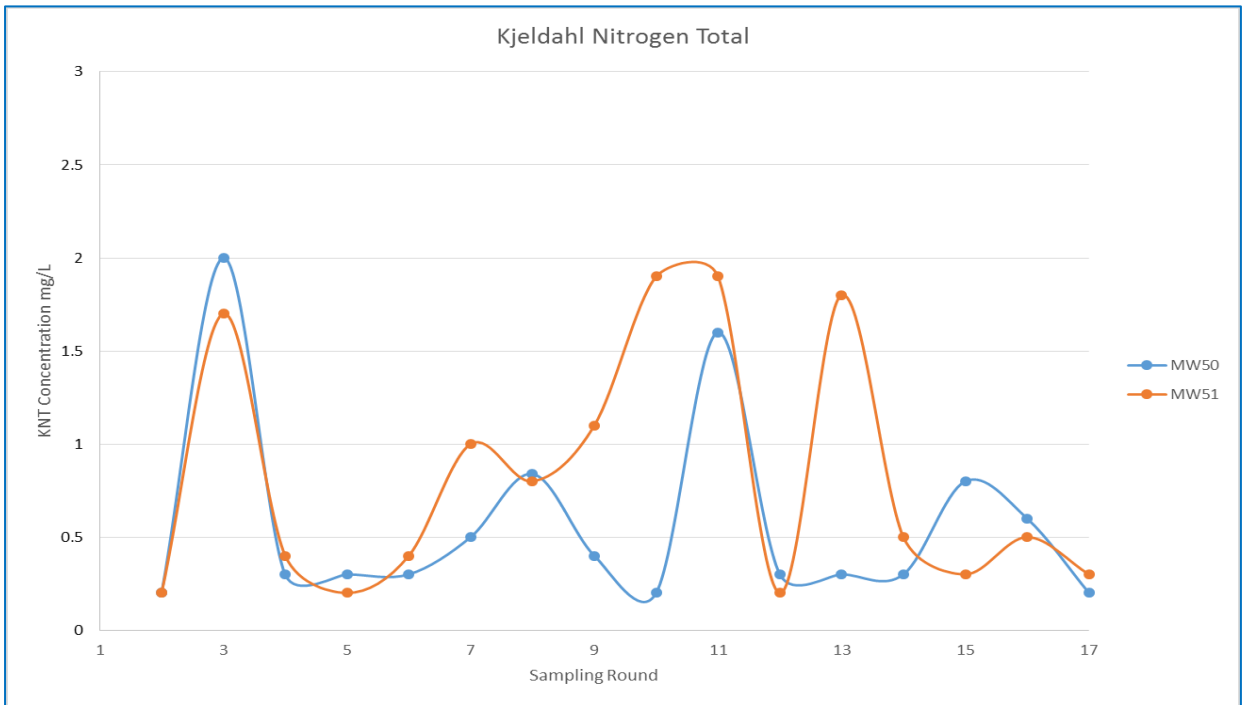
Graph 47: Kjeldahl nitrogen total concentrations over the sampling period.



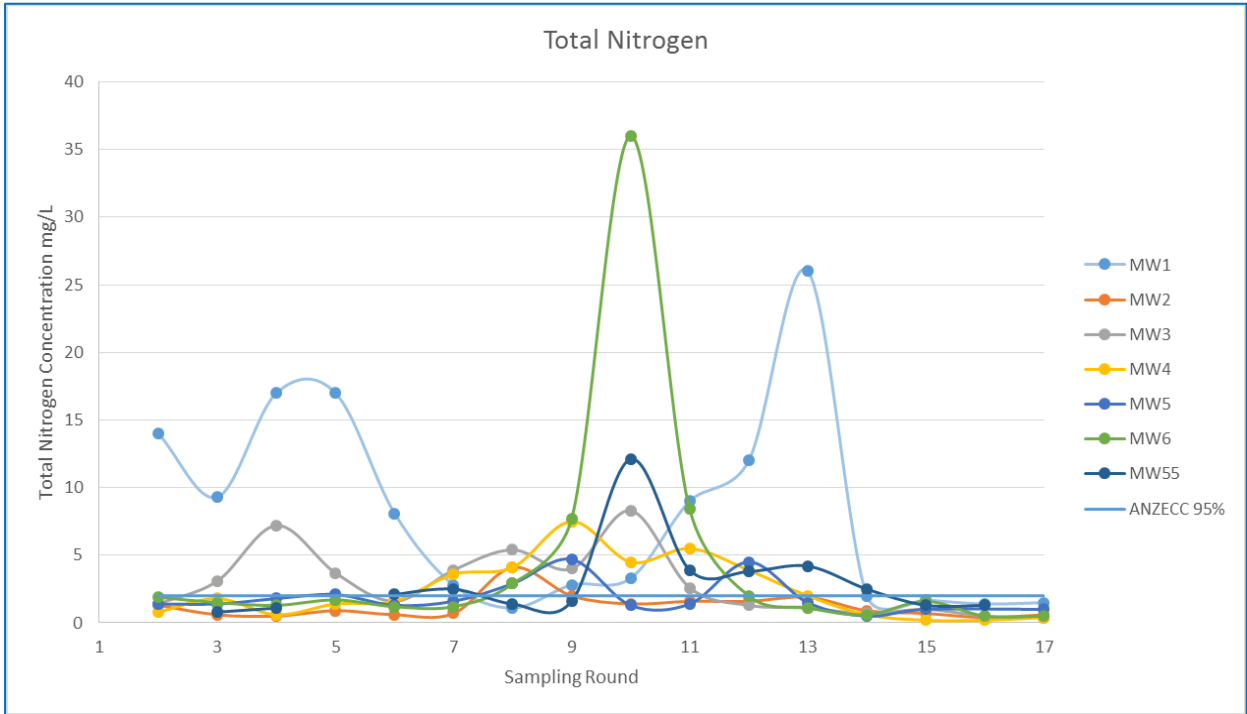
Graph 48: Kjeldahl nitrogen total concentrations over the sampling period.



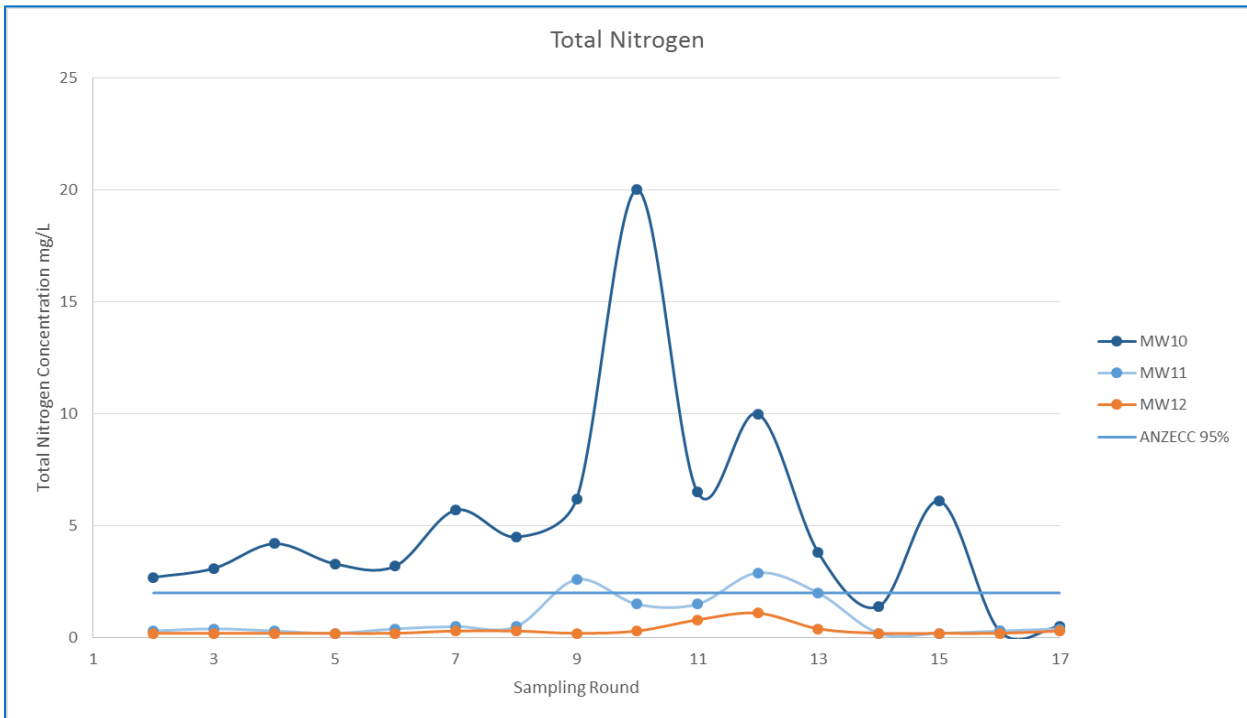
Graph 49: Kjeldahl nitrogen total concentrations over the sampling period.



Graph 50: Kjeldahl nitrogen total concentrations over the sampling period.



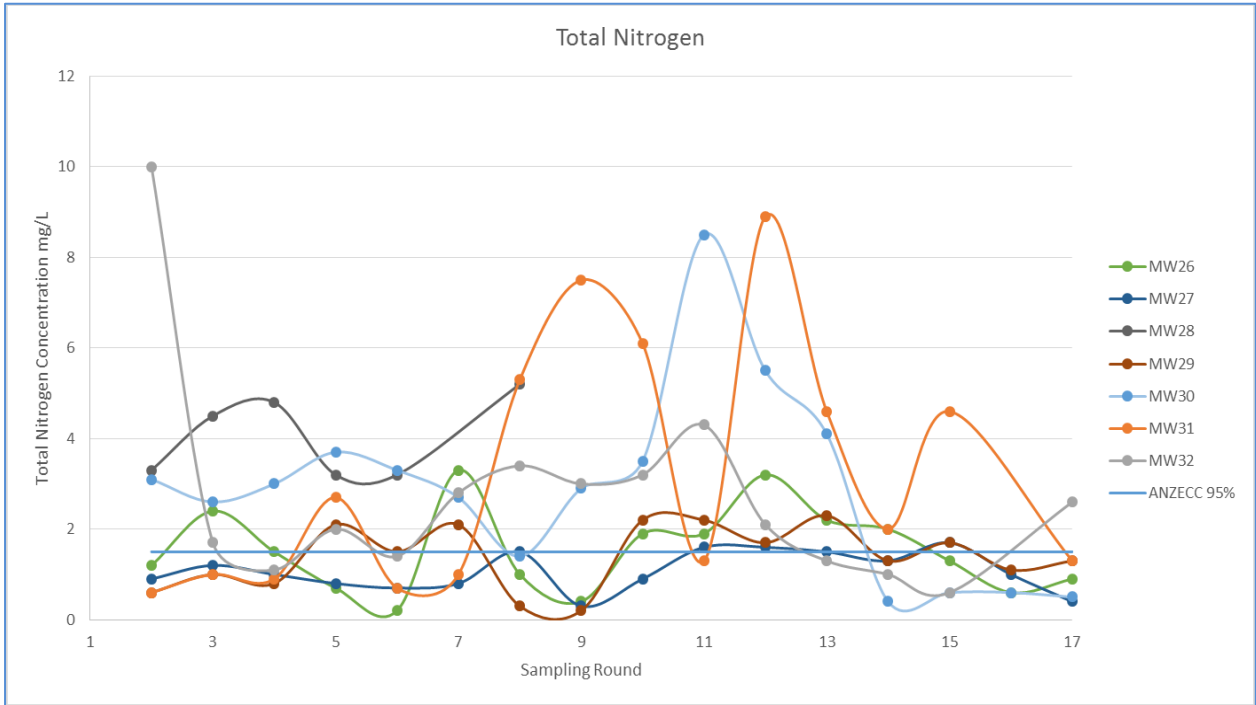
Graph 51: Total nitrogen concentrations over the sampling period.



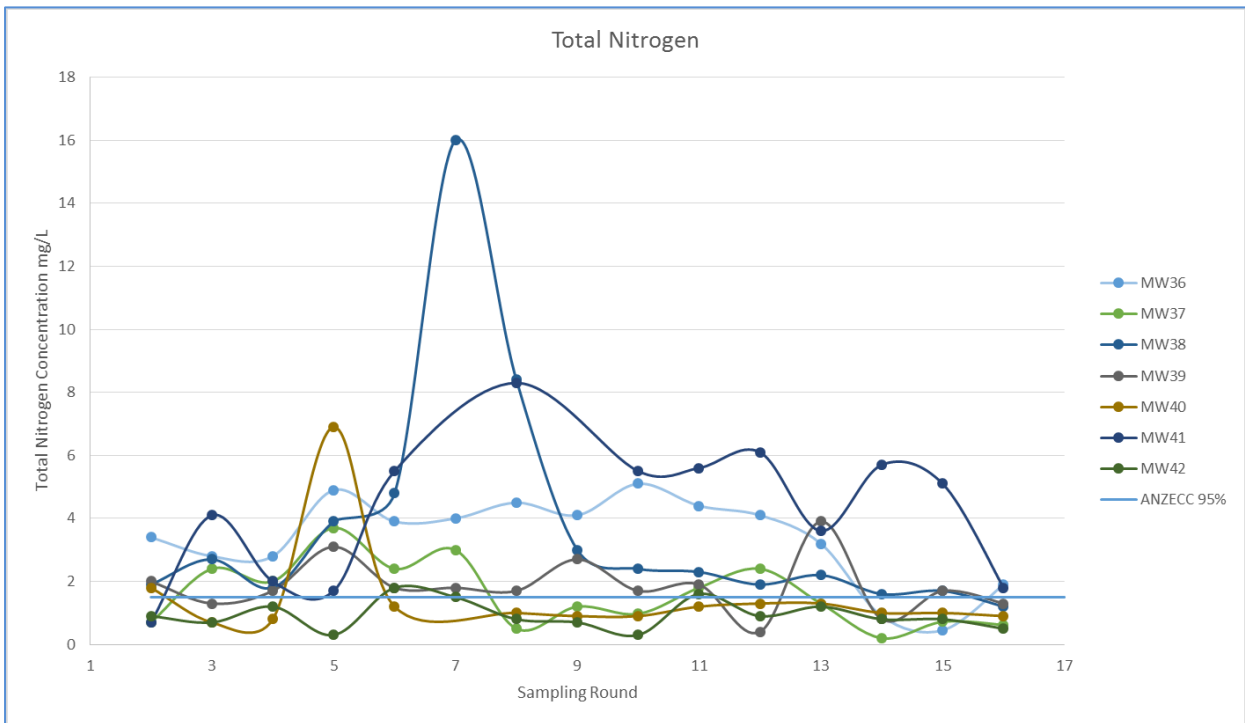
Graph 52: Total nitrogen concentrations over the sampling period.

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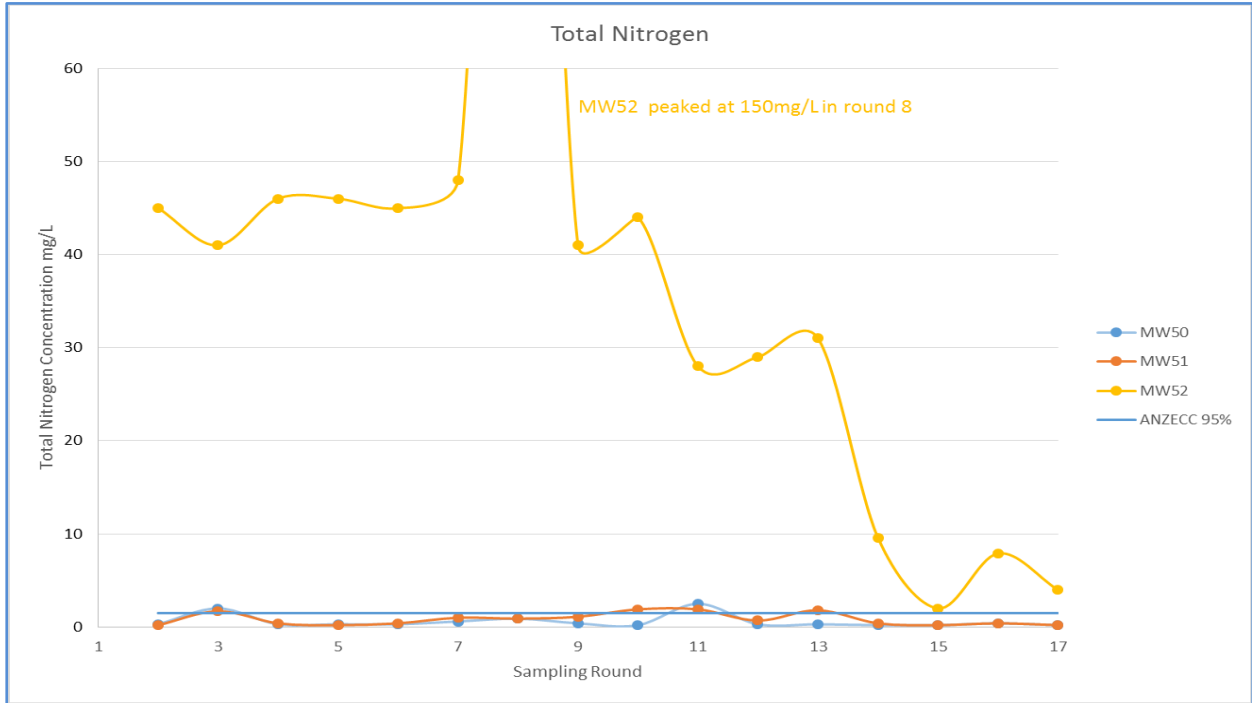
Graph 53: Total nitrogen concentrations over the sampling period.



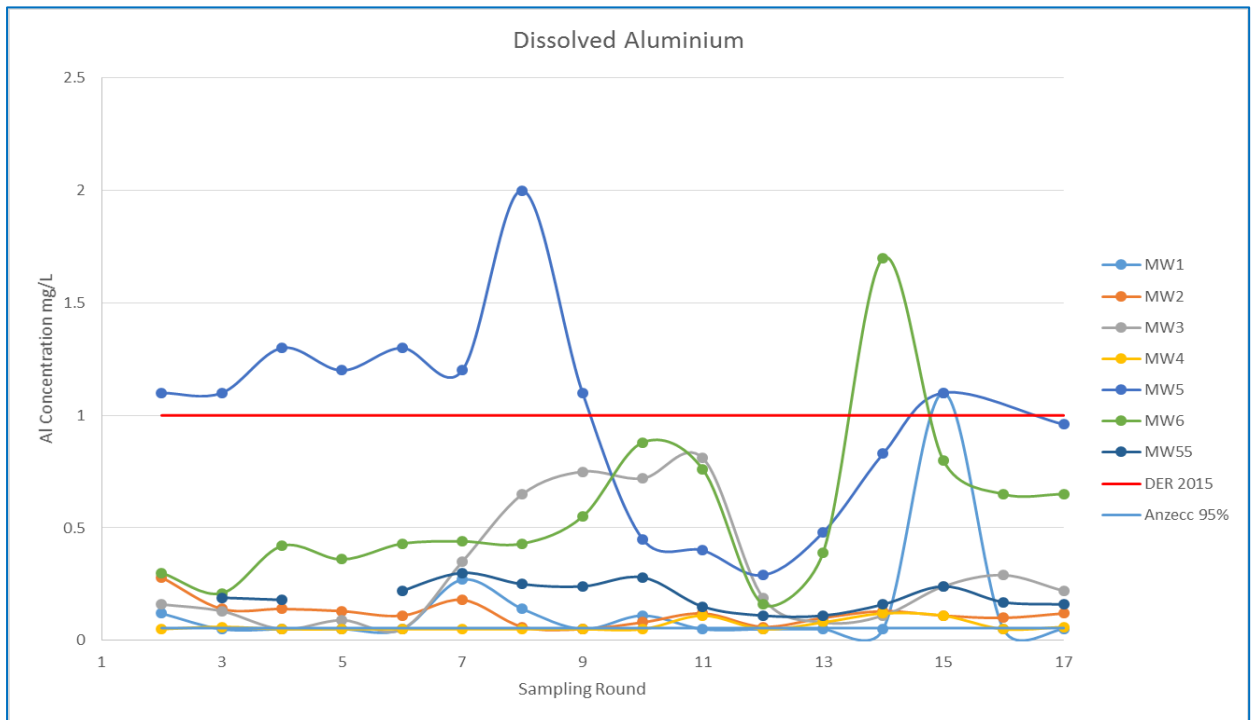
Graph 54: Total nitrogen concentrations over the sampling period.

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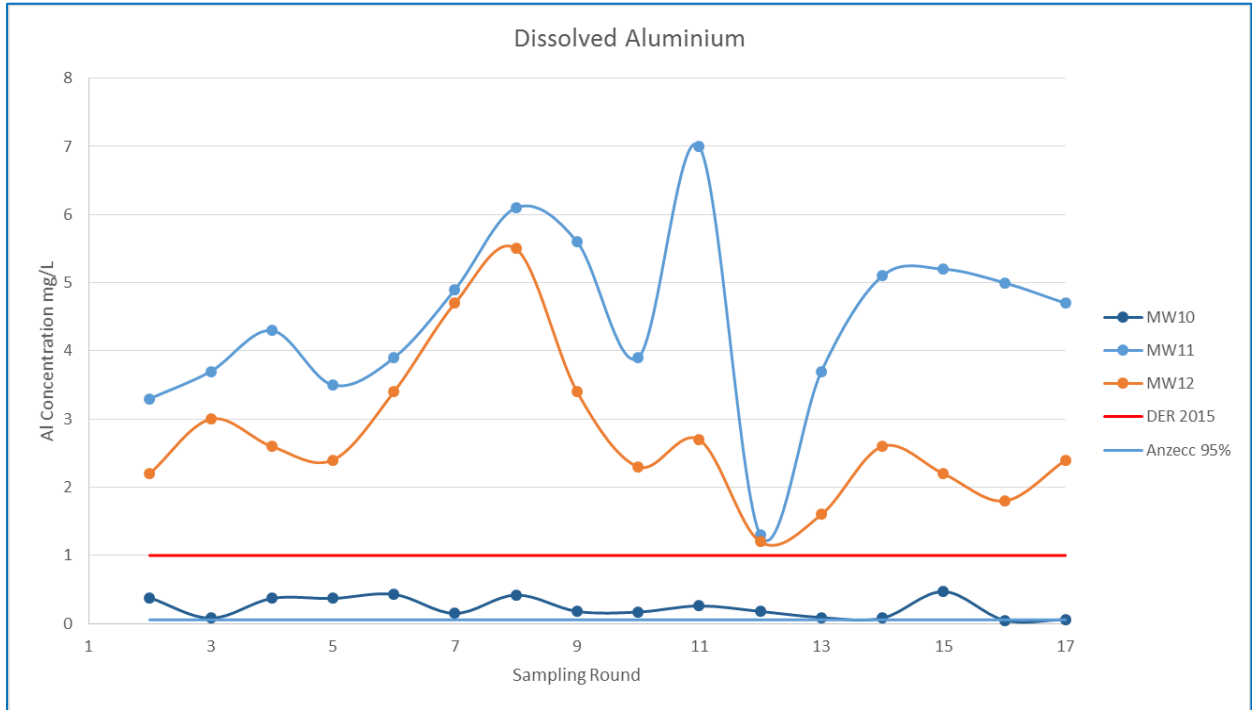
Graph 55: Total nitrogen concentrations over the sampling period.



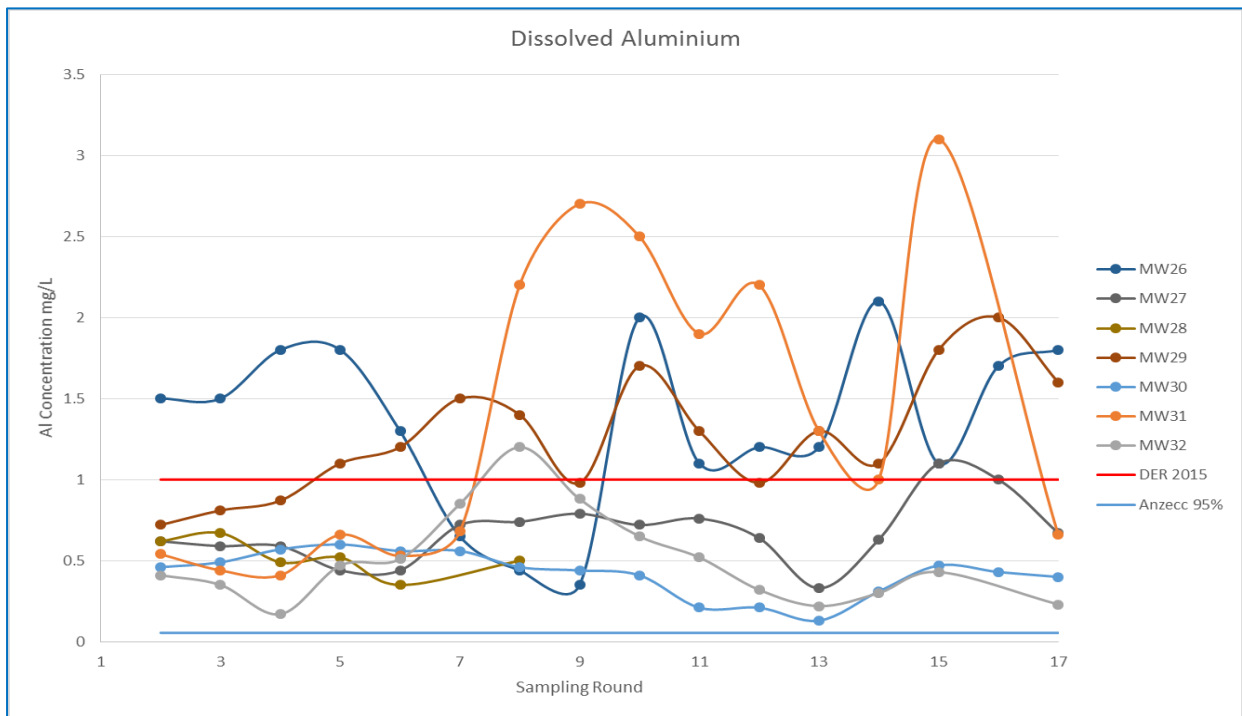
Graph 56: Dissolved Al concentrations over the sampling period.

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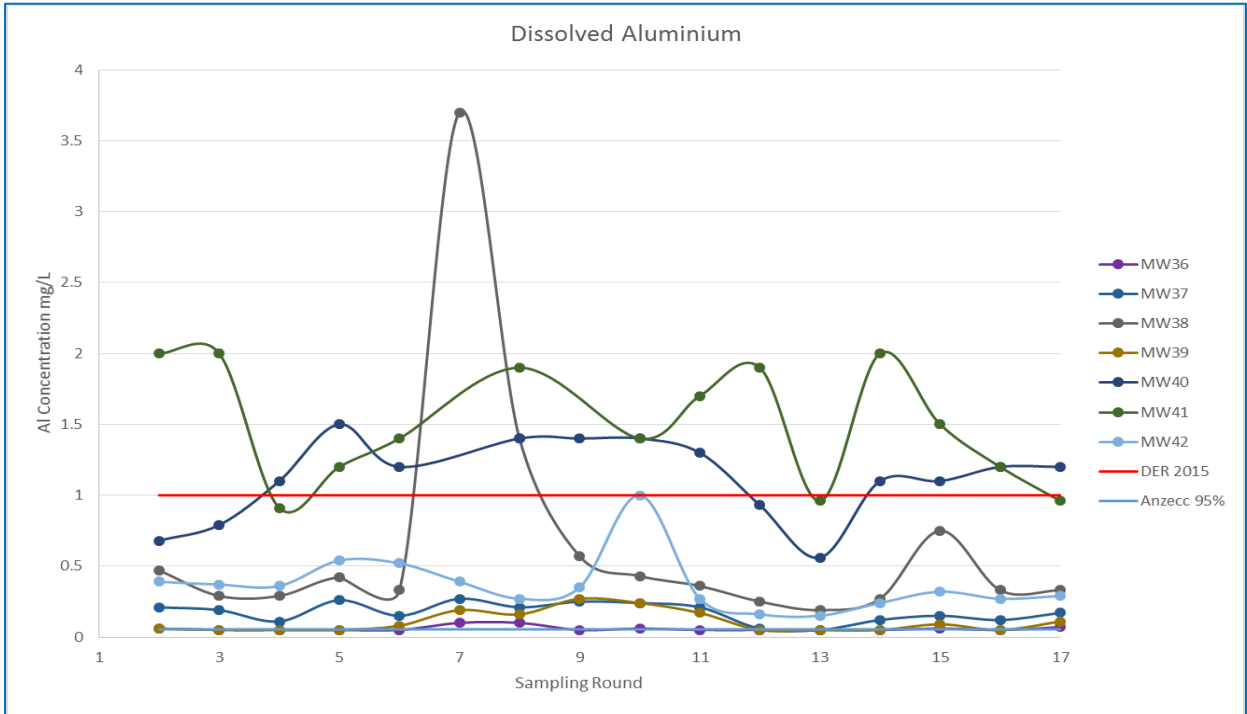
Graph 57: Dissolved Al concentrations over the sampling period.



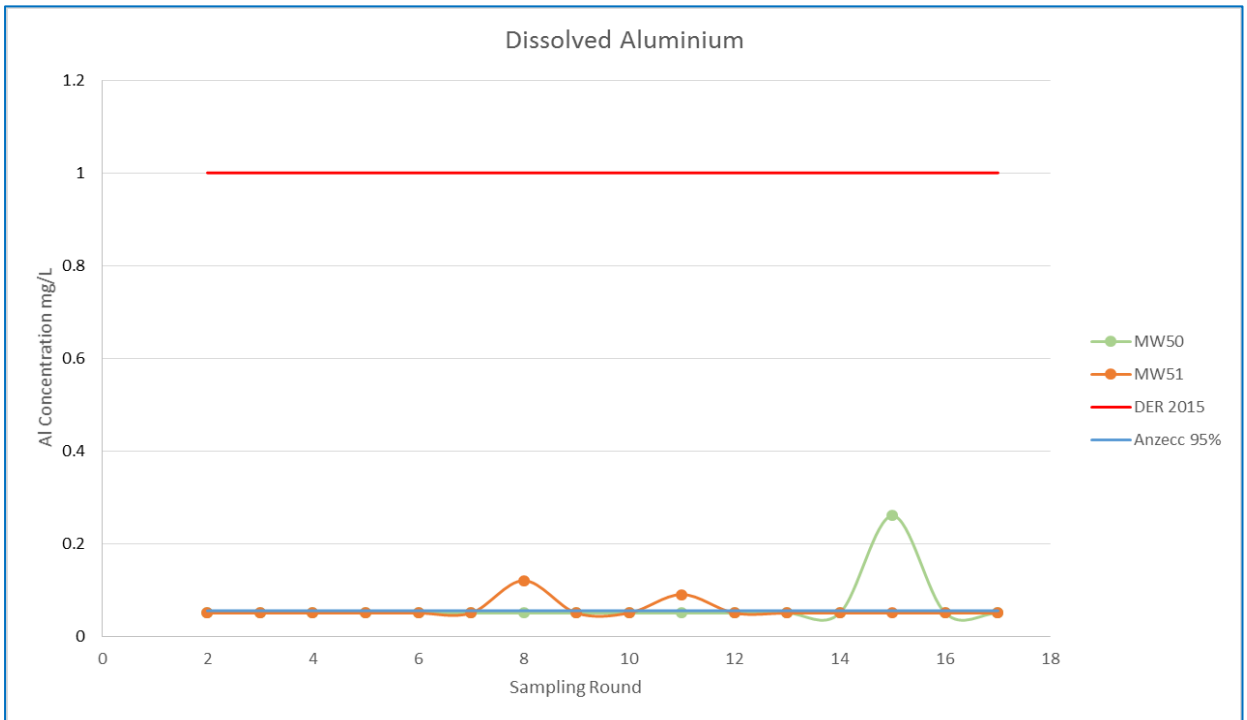
Graph 58: Dissolved Al concentrations over the sampling period.

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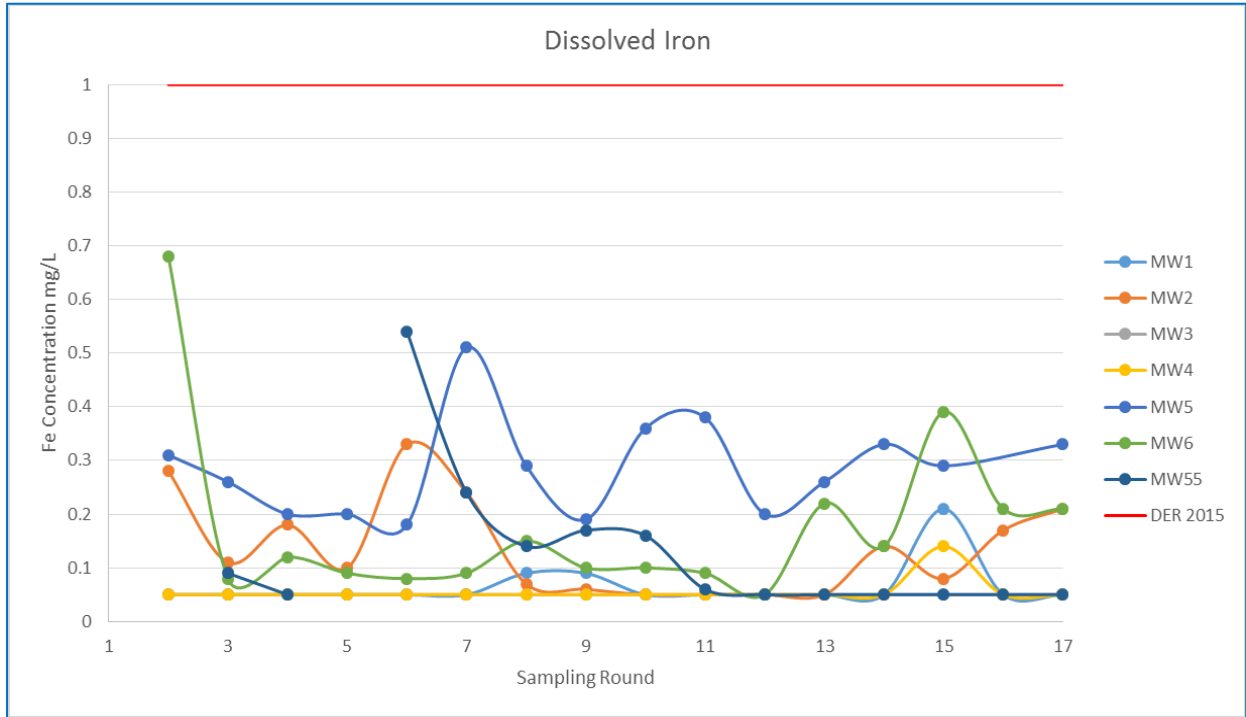
Graph 59: Dissolved Al concentrations over the sampling period.



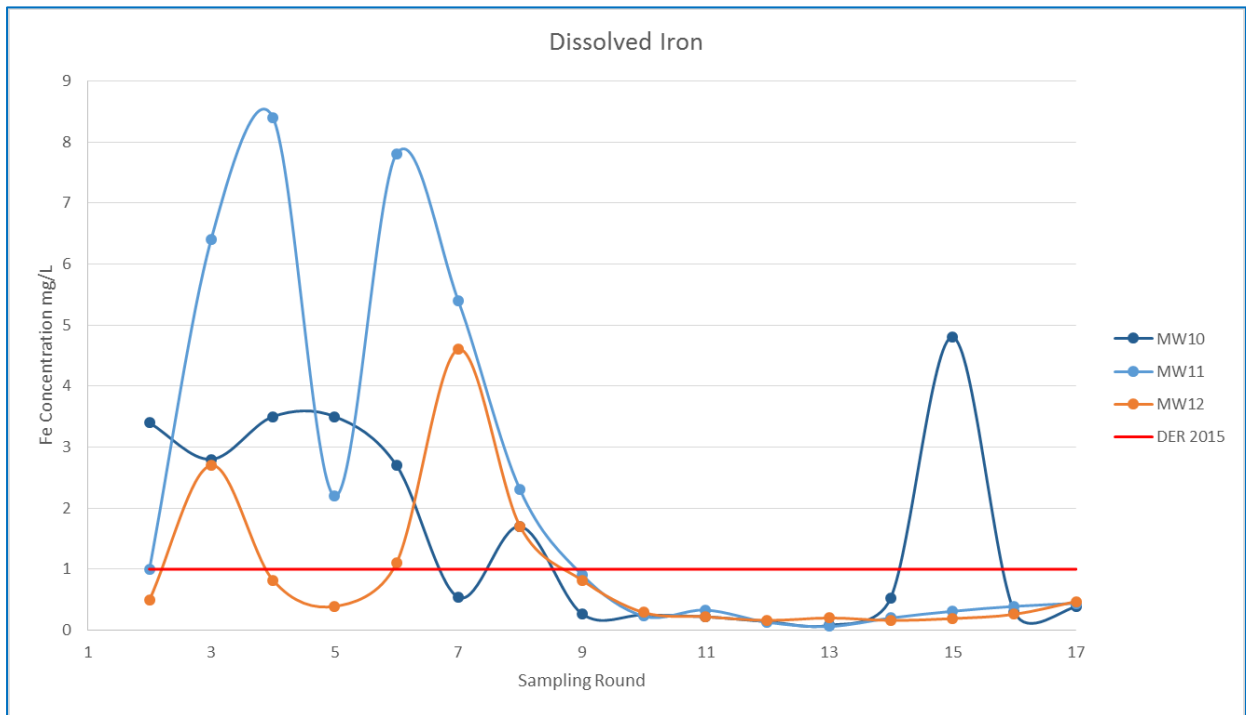
Graph 60: Dissolved Al concentrations over the sampling period.

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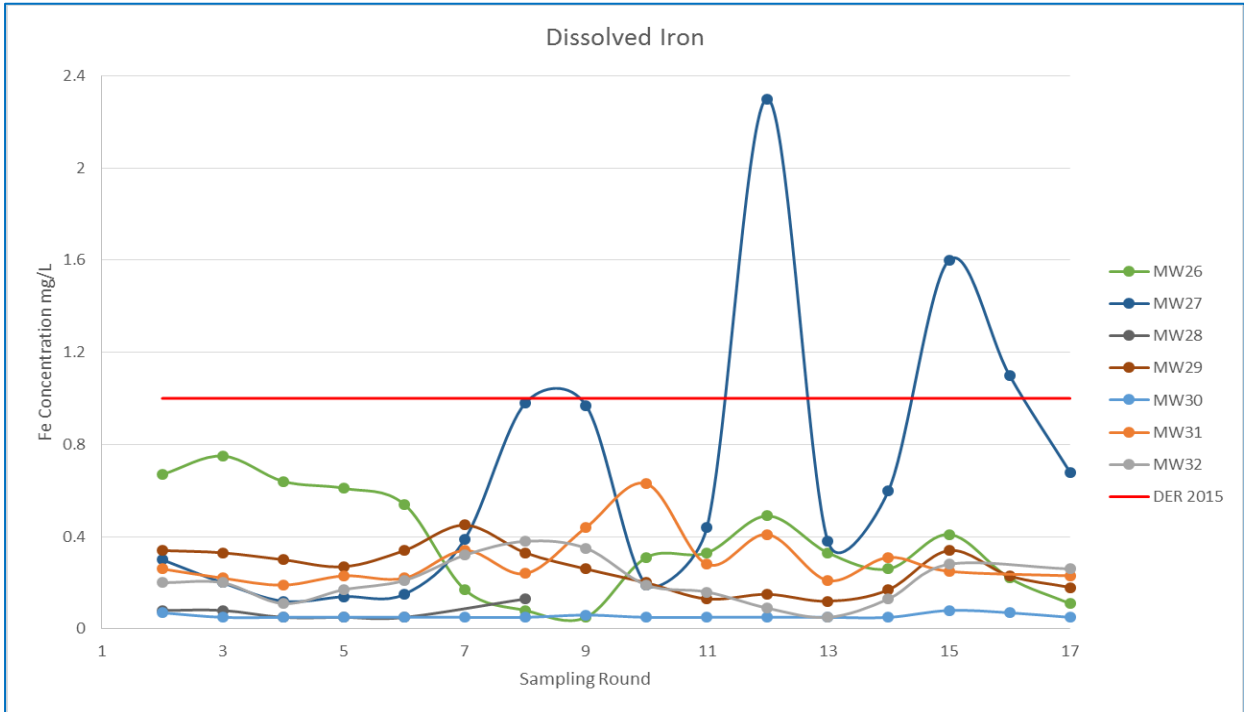
Graph 61: Dissolved Fe concentrations over the sampling period.



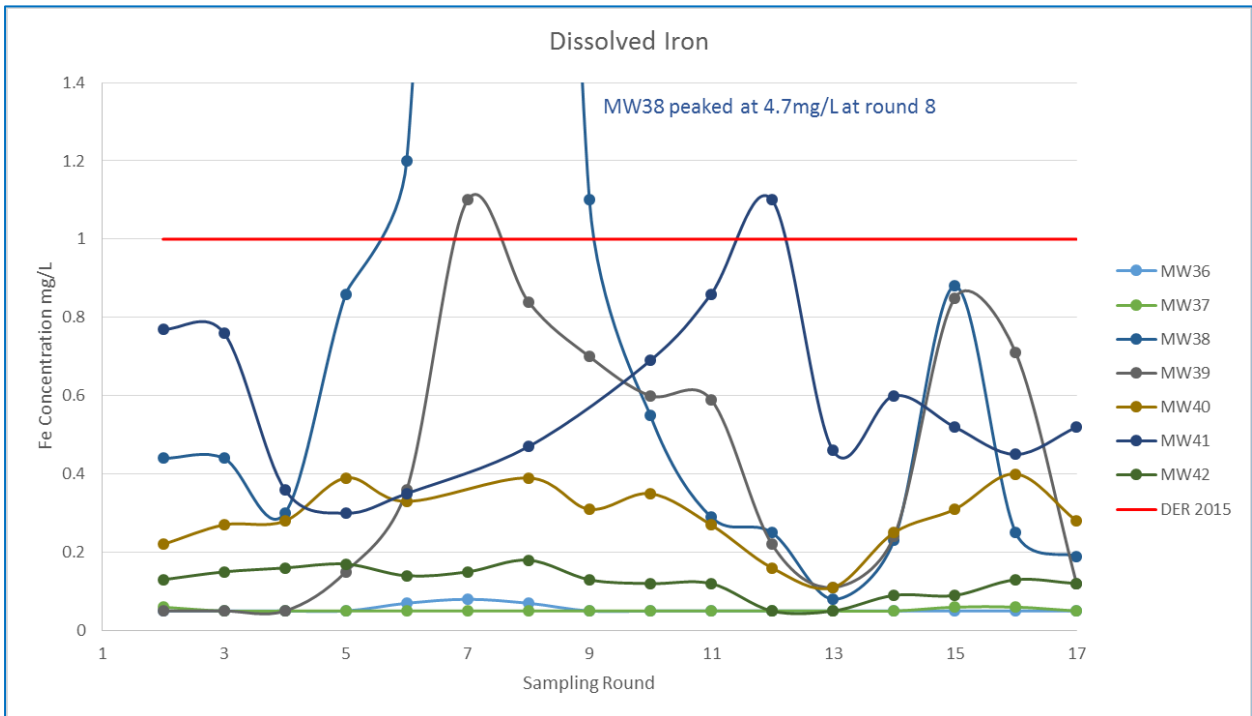
Graph 62: Dissolved Fe concentrations over the sampling period.

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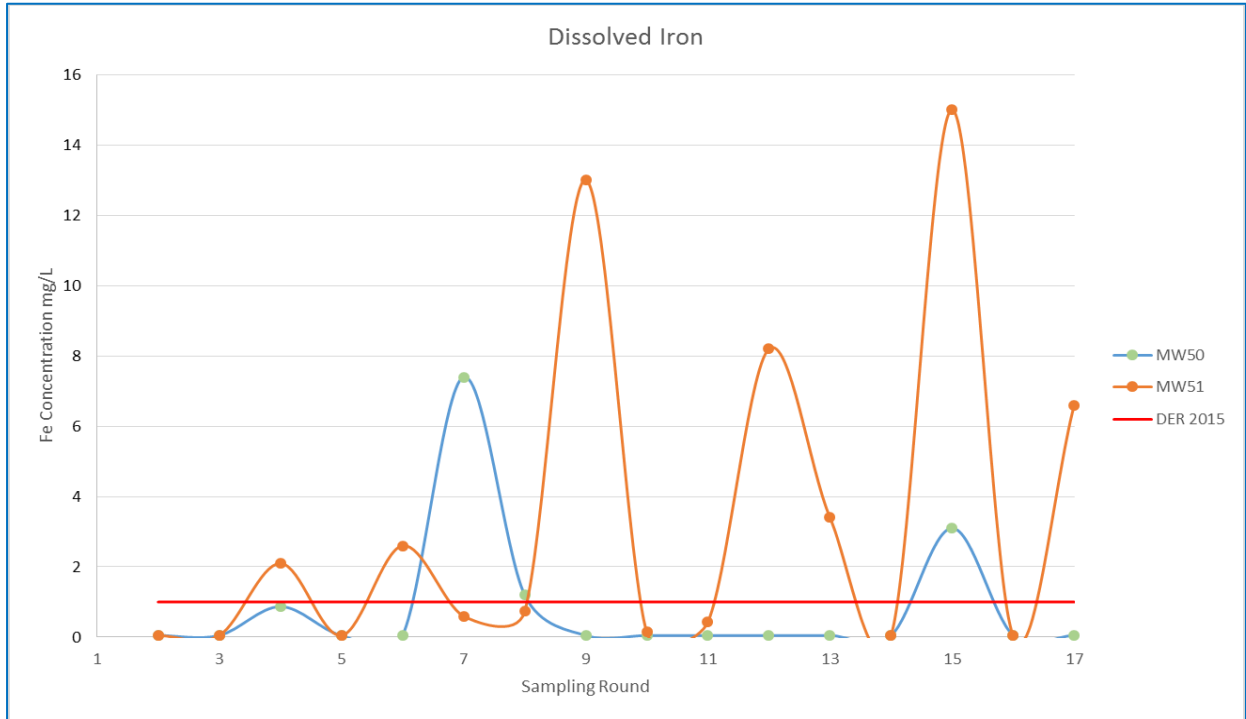
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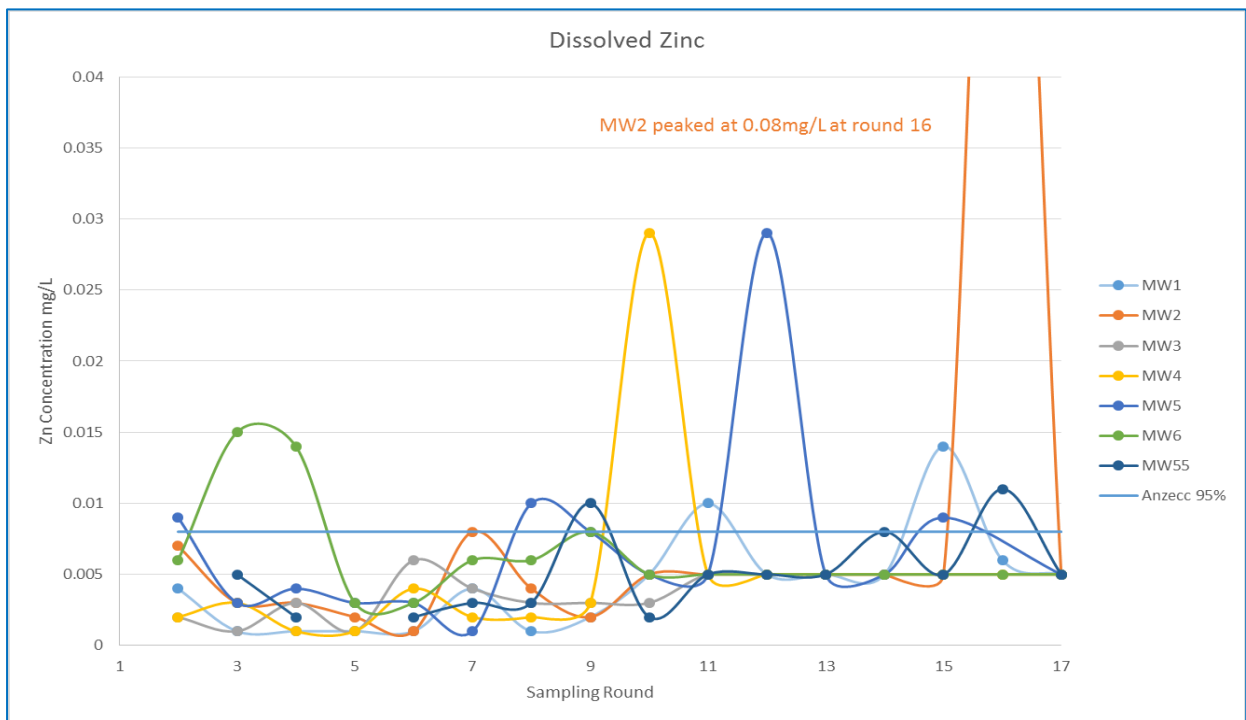
Graph 63: Dissolved Fe concentrations over the sampling period.



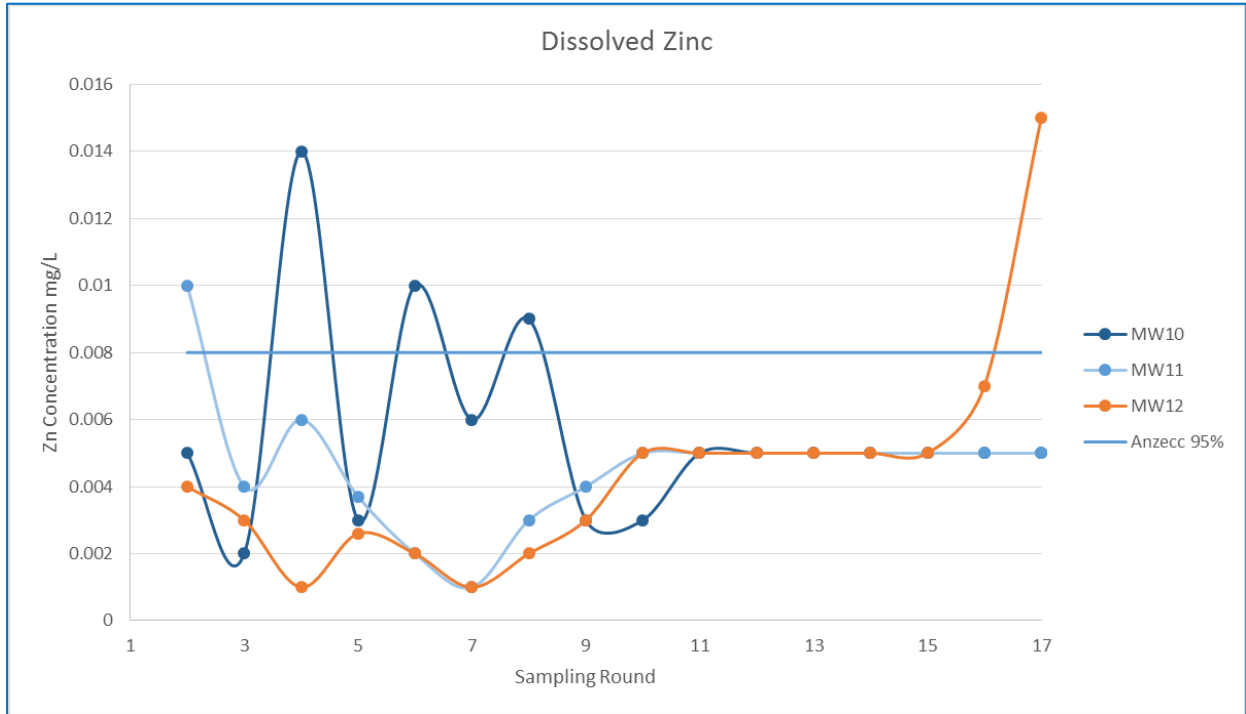
Graph 64: Dissolved Fe concentrations over the sampling period.



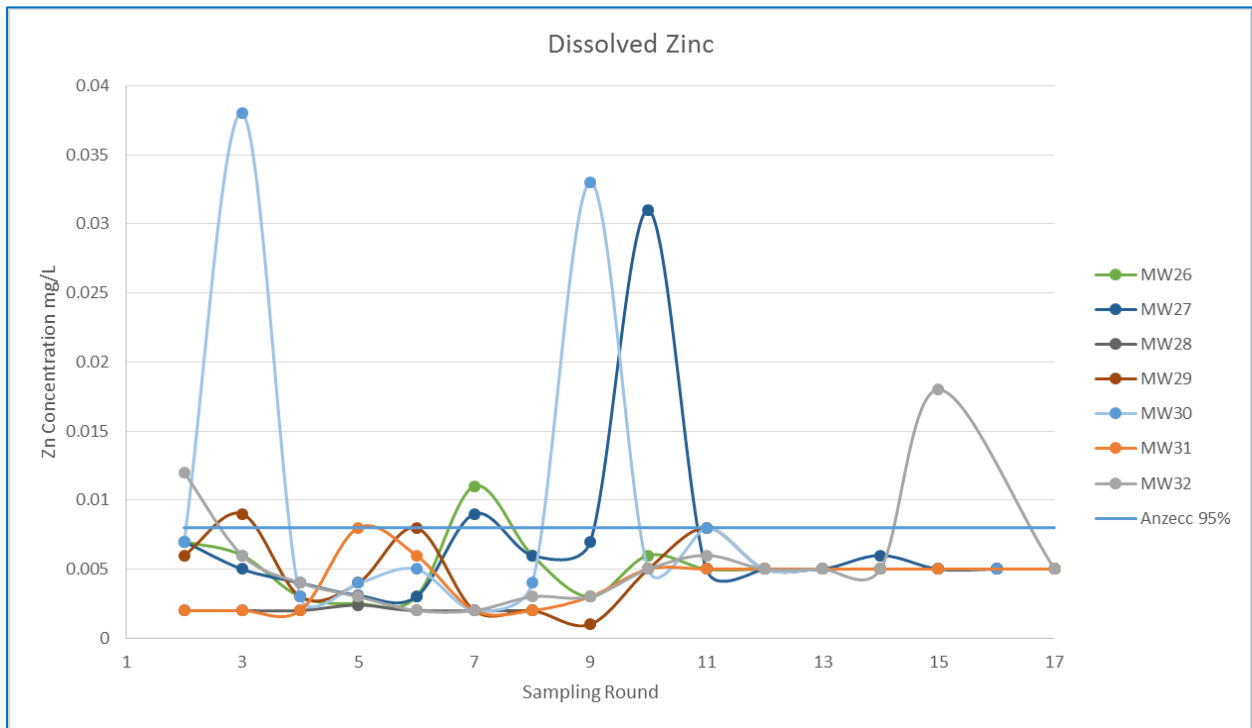
Graph 65: Dissolved Fe concentrations over the sampling period.



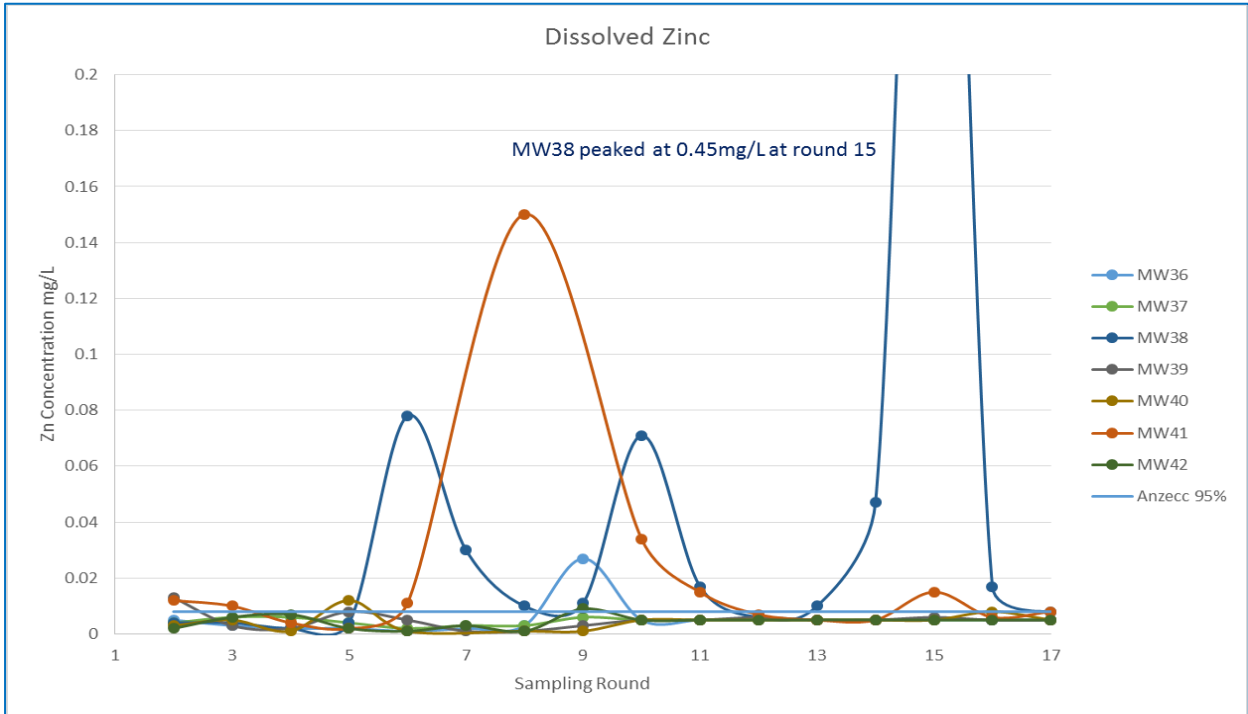
Graph 66: Dissolved Zn concentrations over the sampling period.



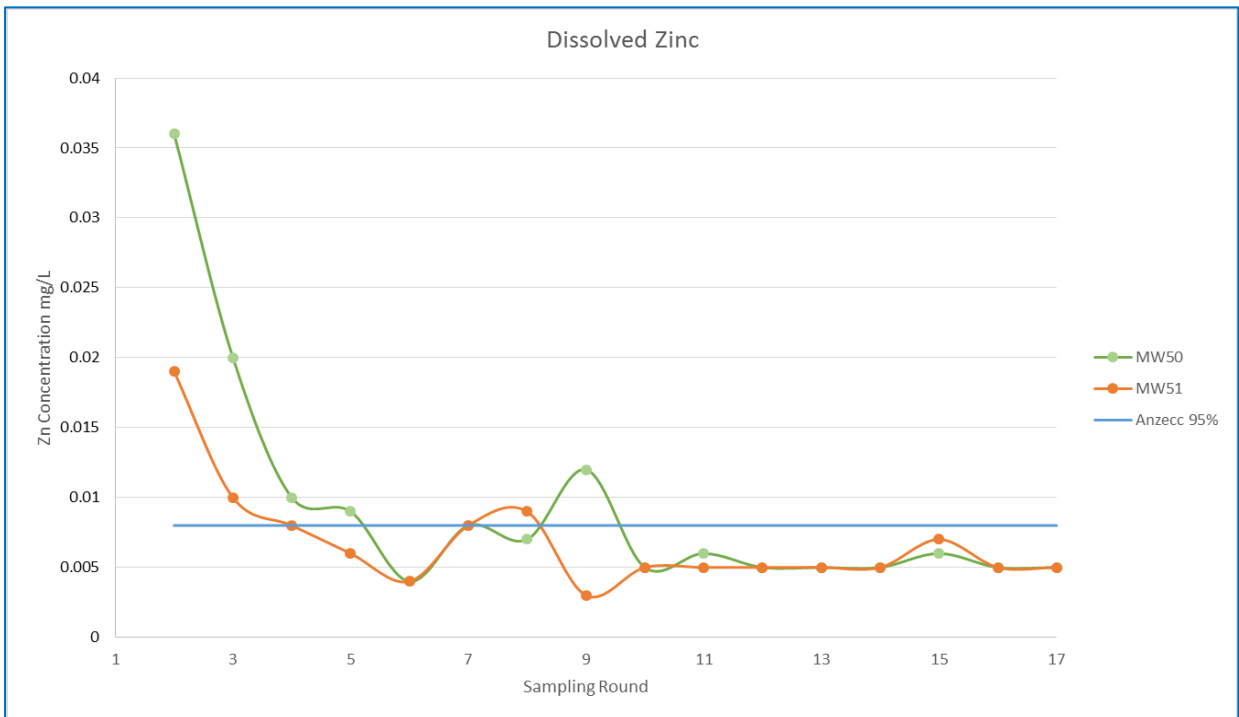
Graph 67: Dissolved Zn concentrations over the sampling period.



Graph 68: Dissolved Zn concentrations over the sampling period.



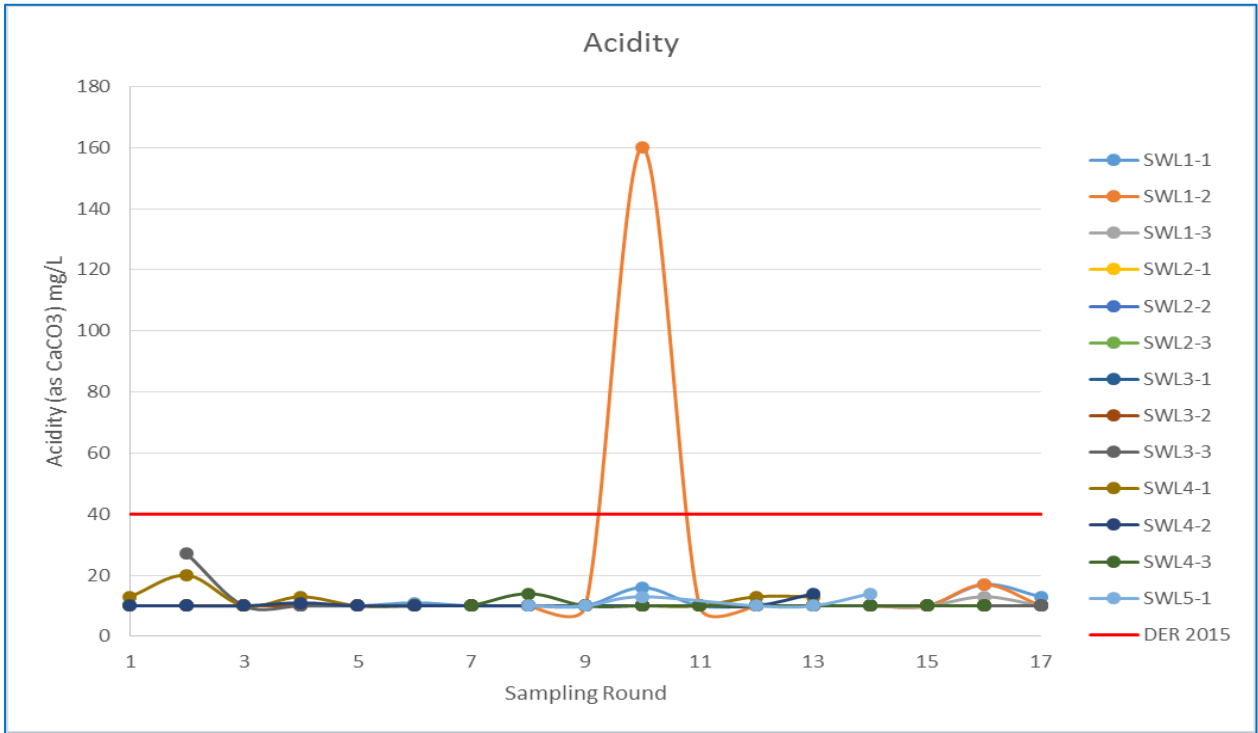
Graph 69: Dissolved Zn concentrations over the sampling period.



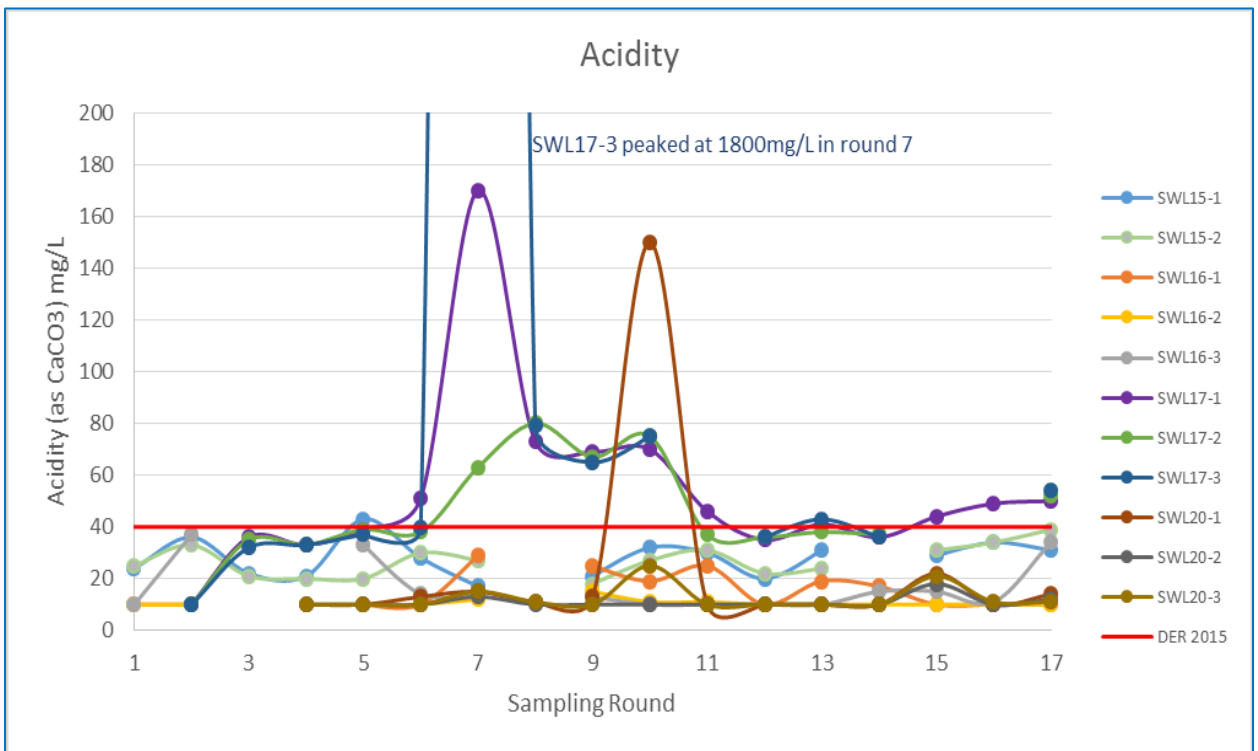
Graph 70: Dissolved Zn concentrations over the sampling period.

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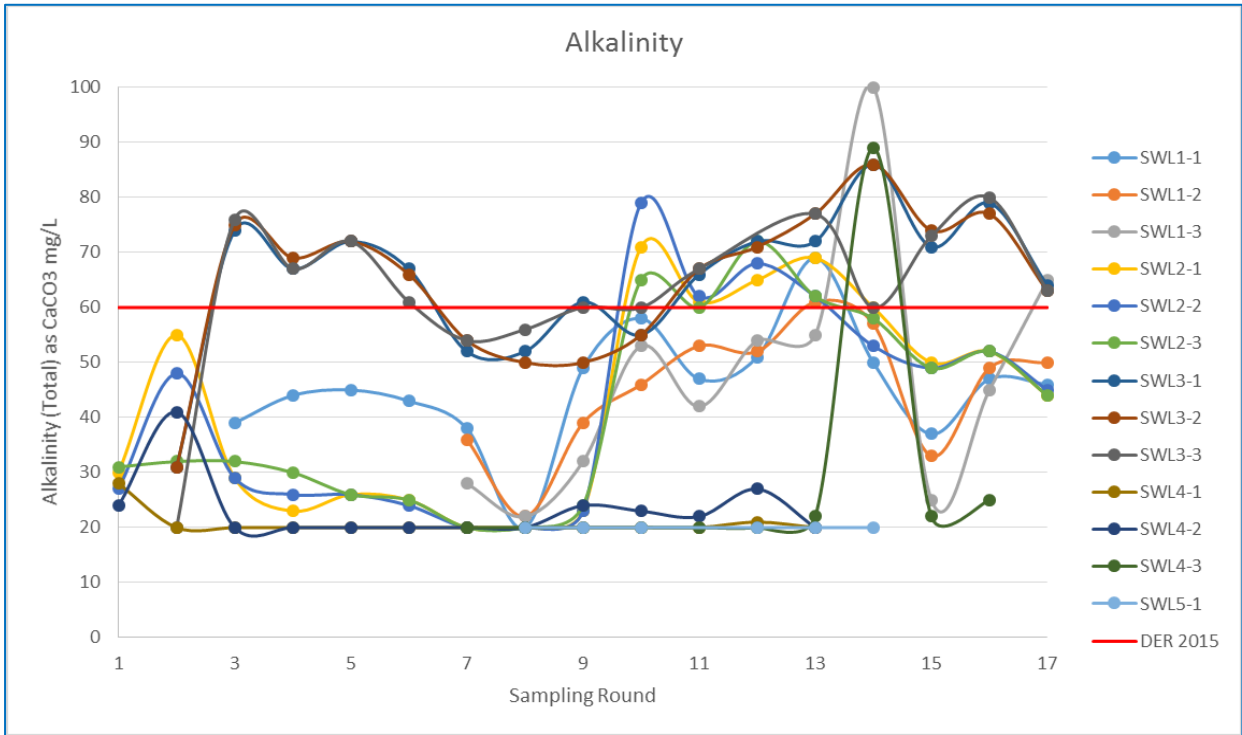
Graph 71: Acidity concentrations over the sampling period.



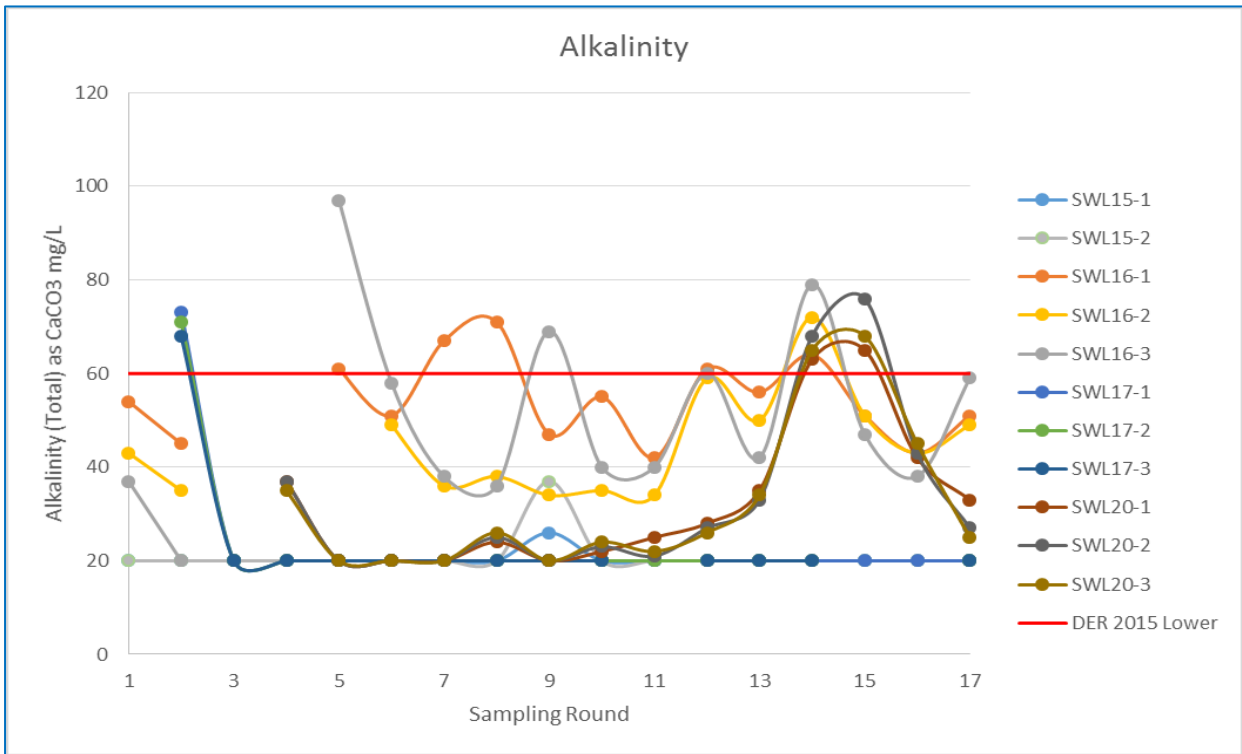
Graph 72: Acidity concentrations over the sampling period.

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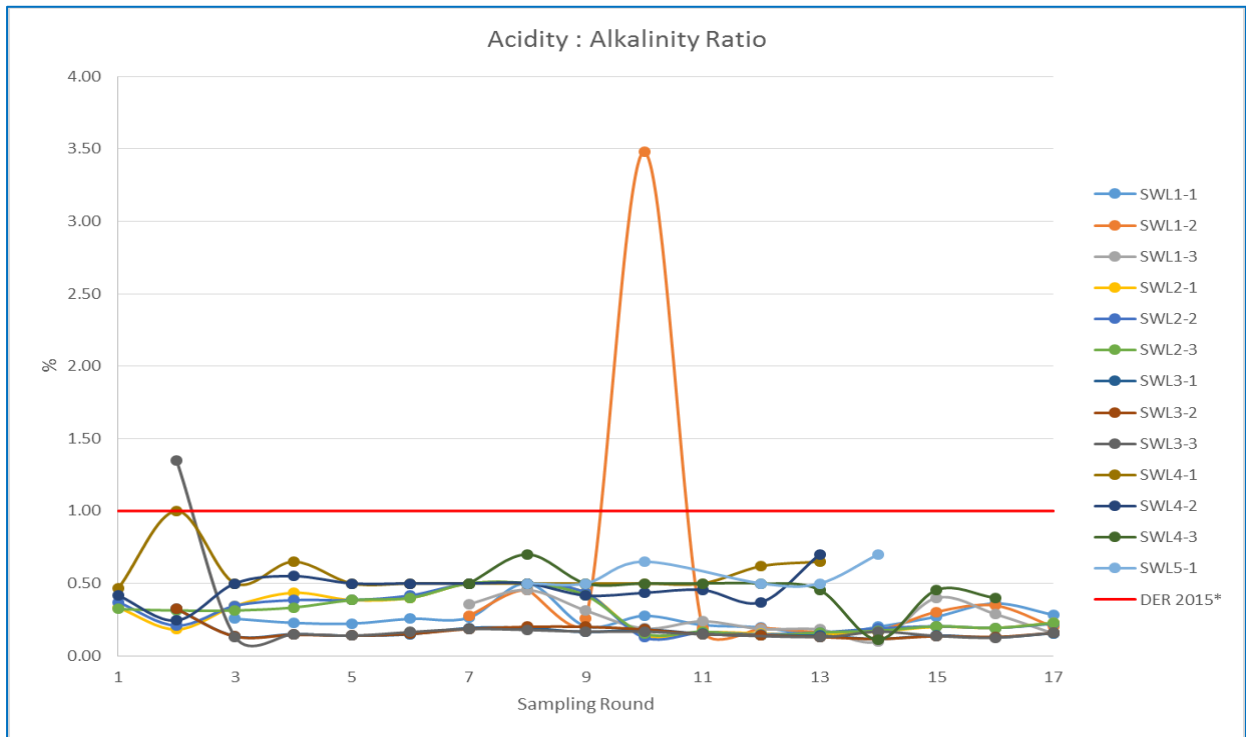
Graph 73: Alkalinity concentrations over the sampling period.



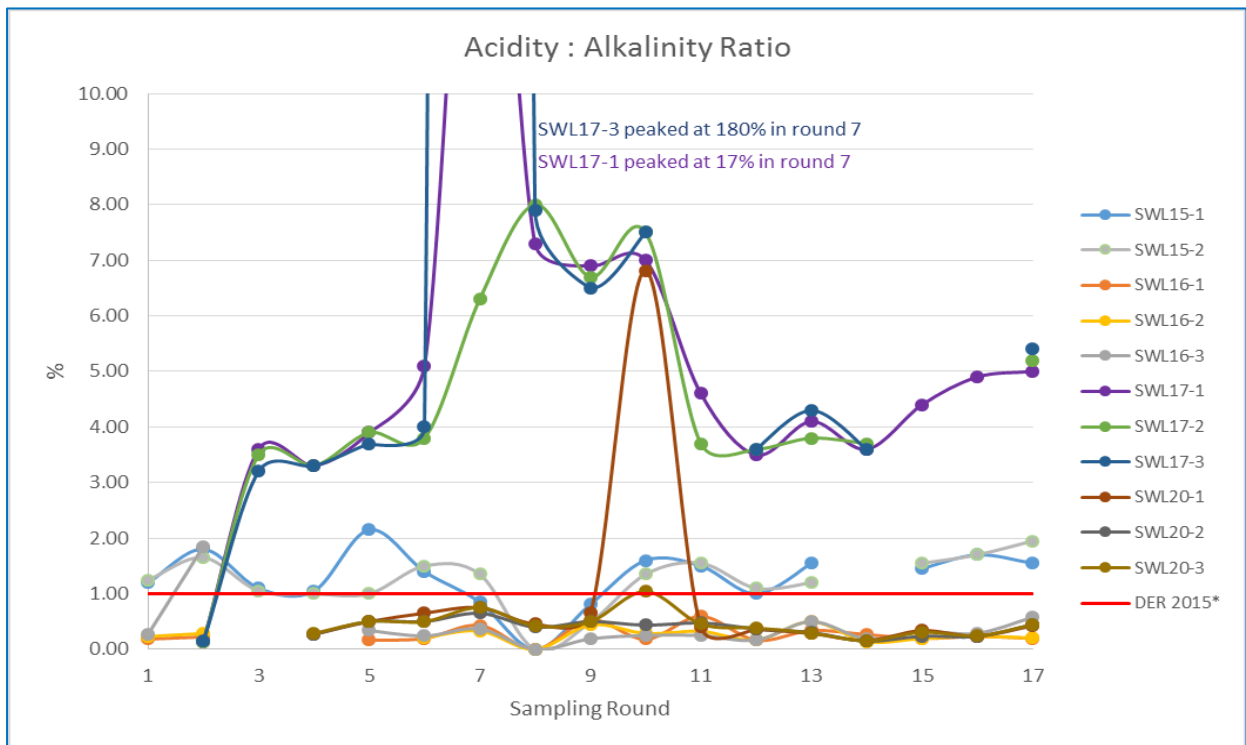
Graph 74: Alkalinity concentrations over the sampling period.

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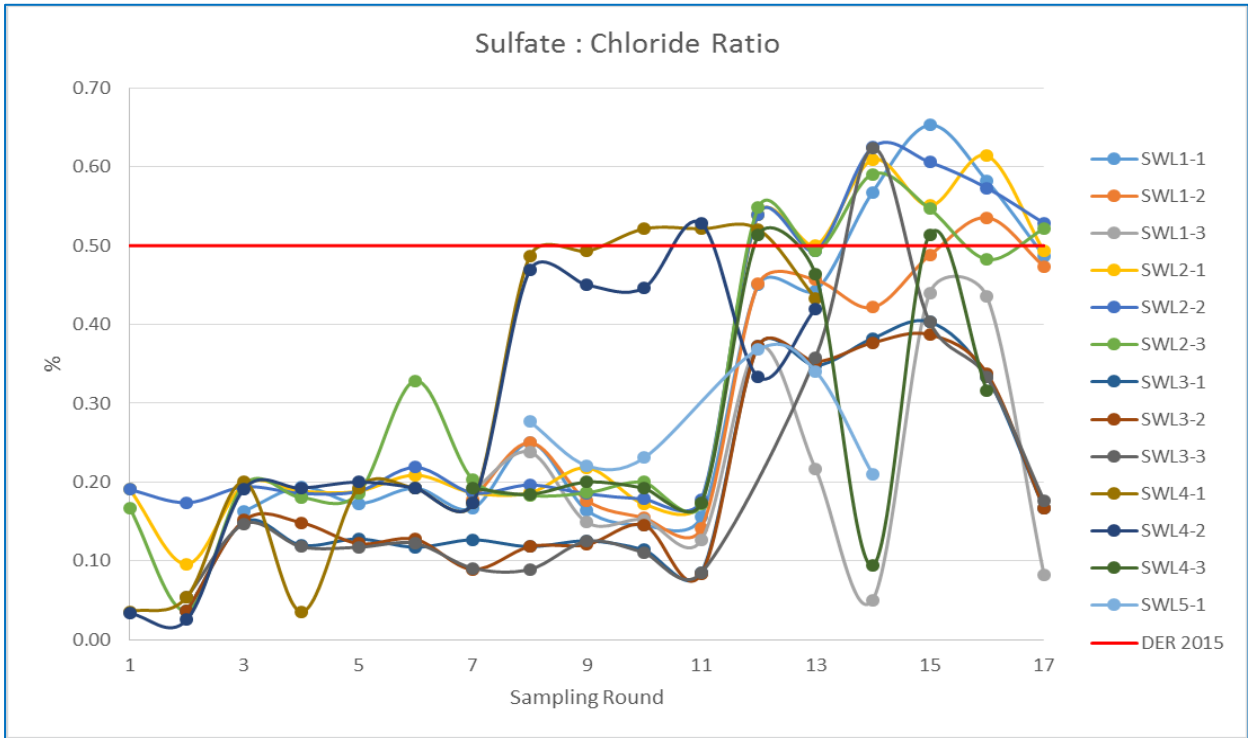
Graph 75: Acidity: Alkalinity ratio over the sampling period.



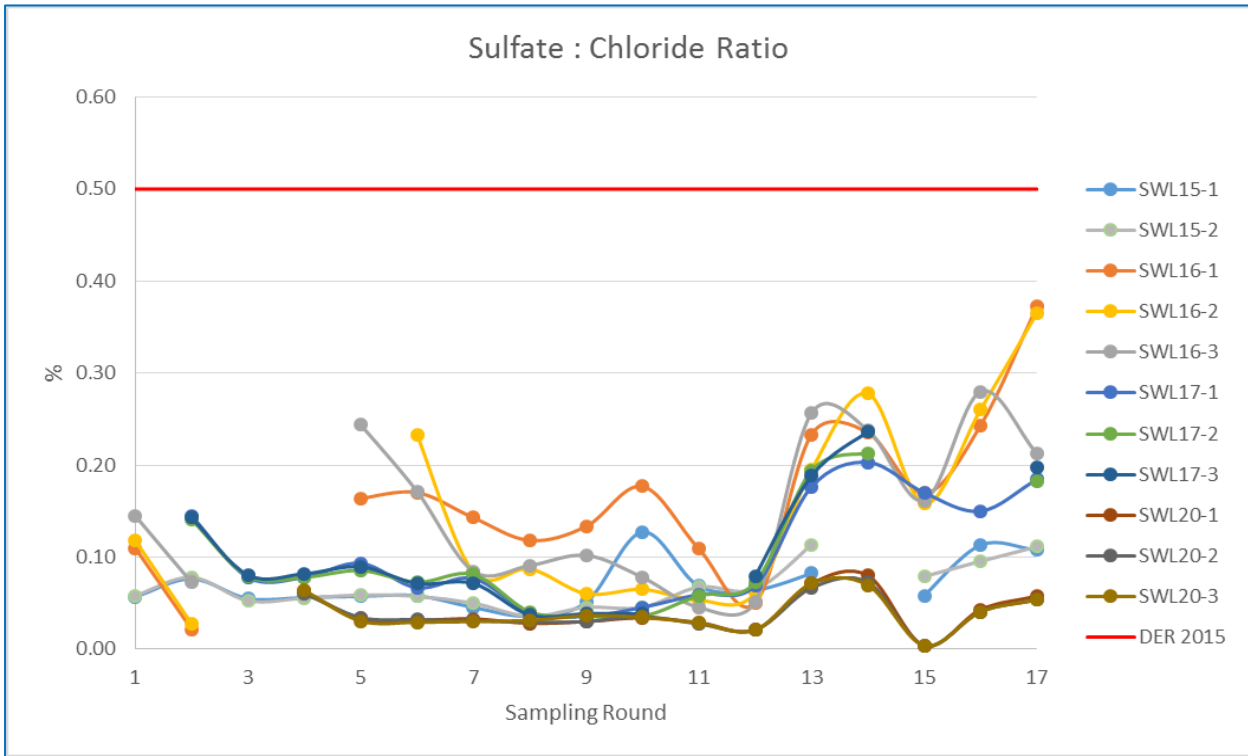
Graph 76: Acidity: Alkalinity ratio over the sampling period.

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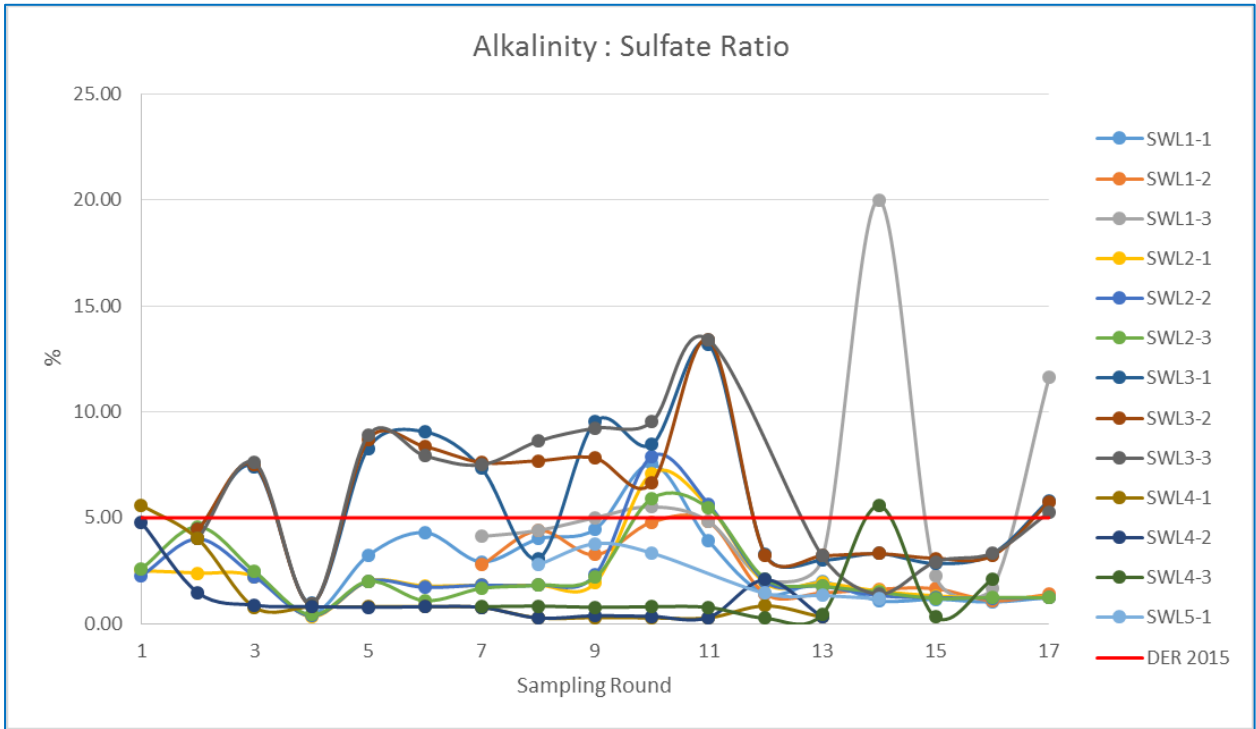
Graph 77: Sulfate: chloride ratio over the sampling period.



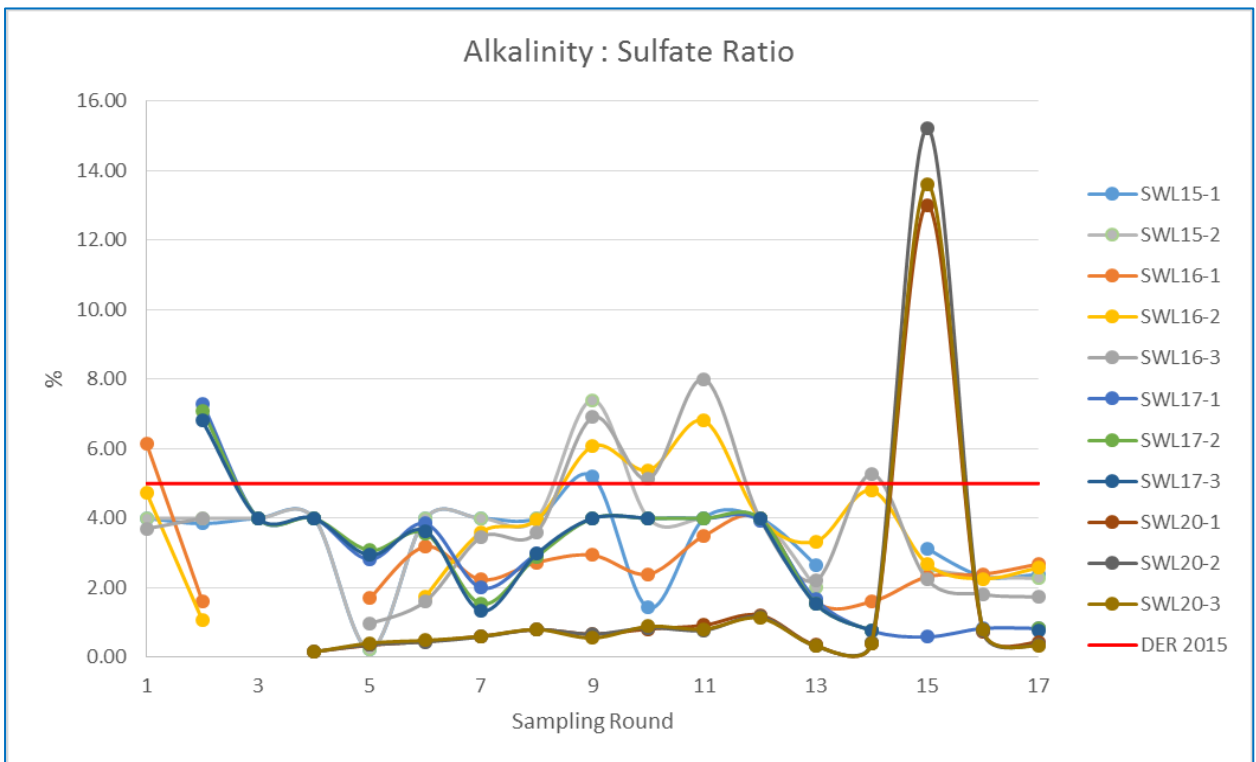
Graph 78: Sulfate: chloride ratio over the sampling period.

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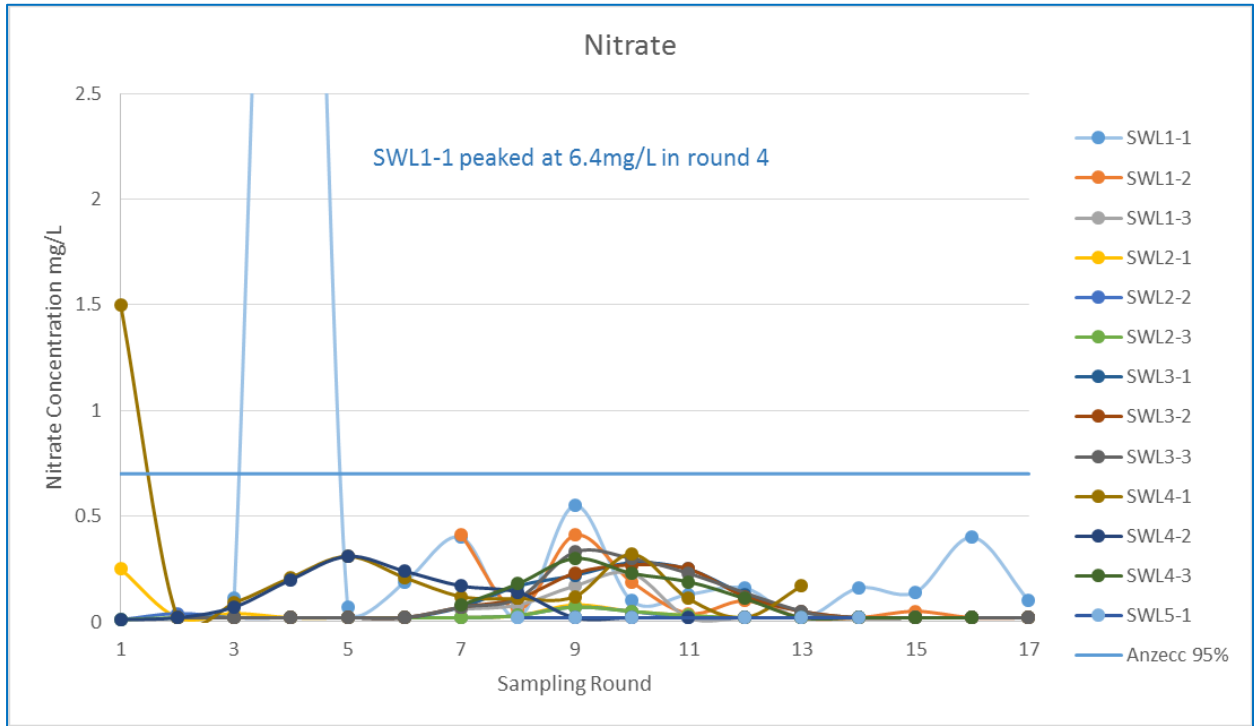
Graph 79: Alkalinity: Sulfate ratio over the sampling period.



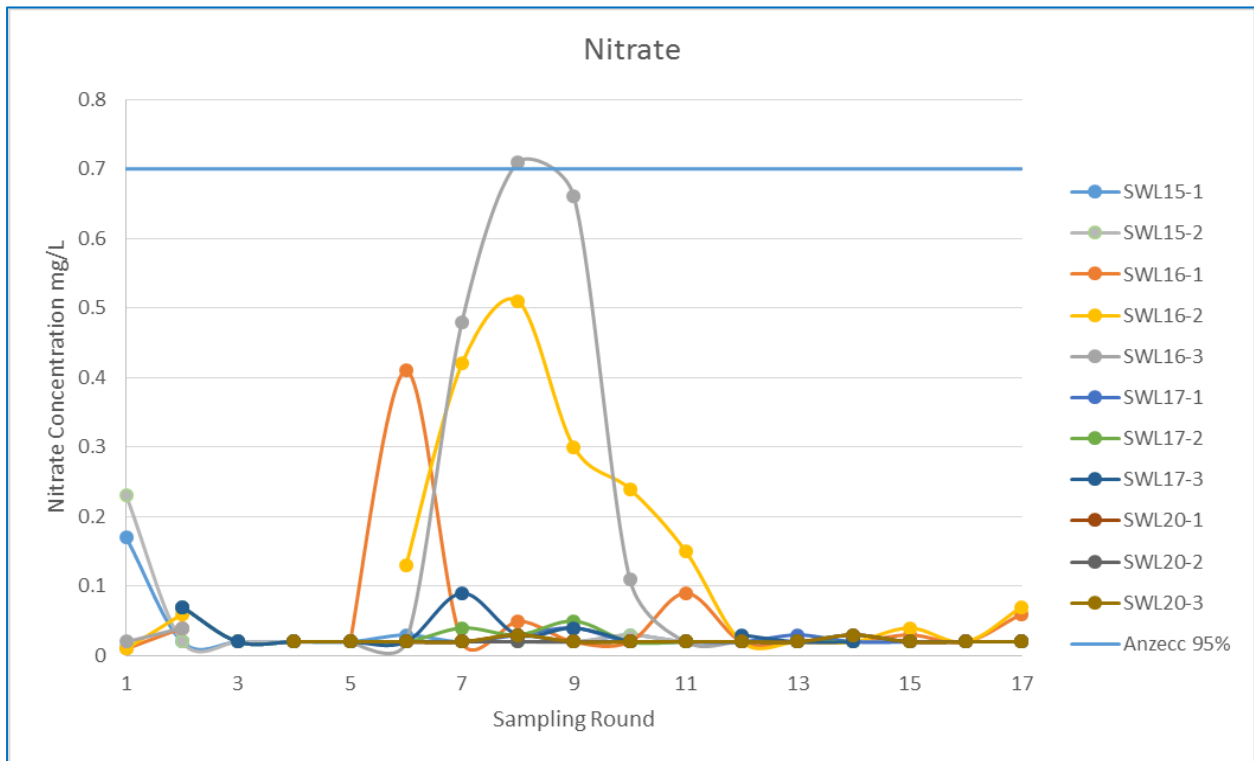
Graph 80: Alkalinity: Sulfate ratio over the sampling period.

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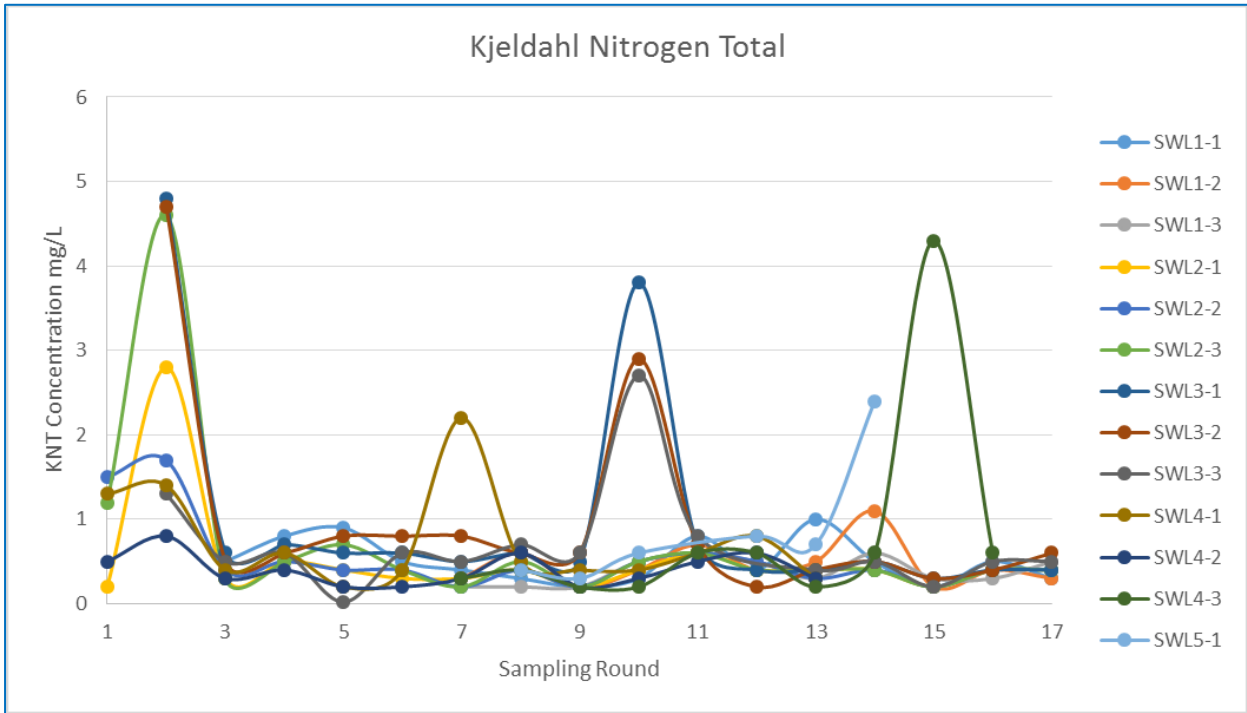
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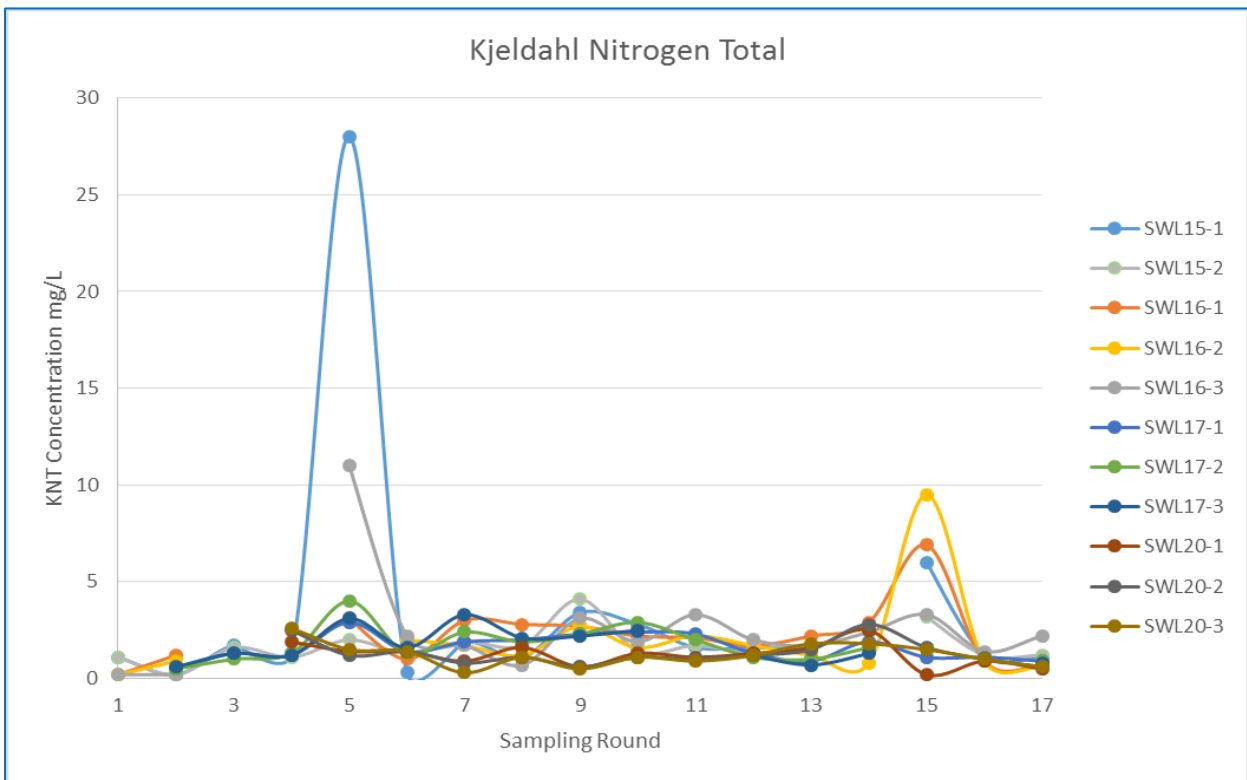
Graph 81: Nitrate concentrations over the sampling period.



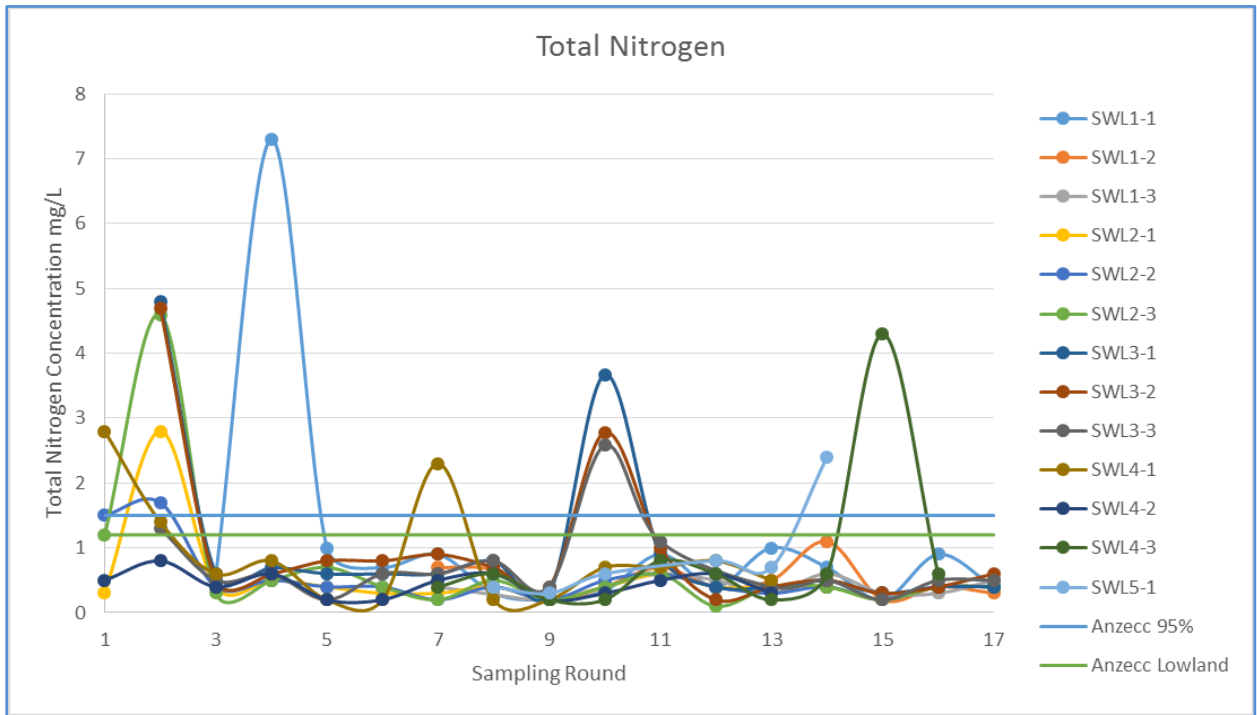
Graph 82: Nitrate concentrations over the sampling period.



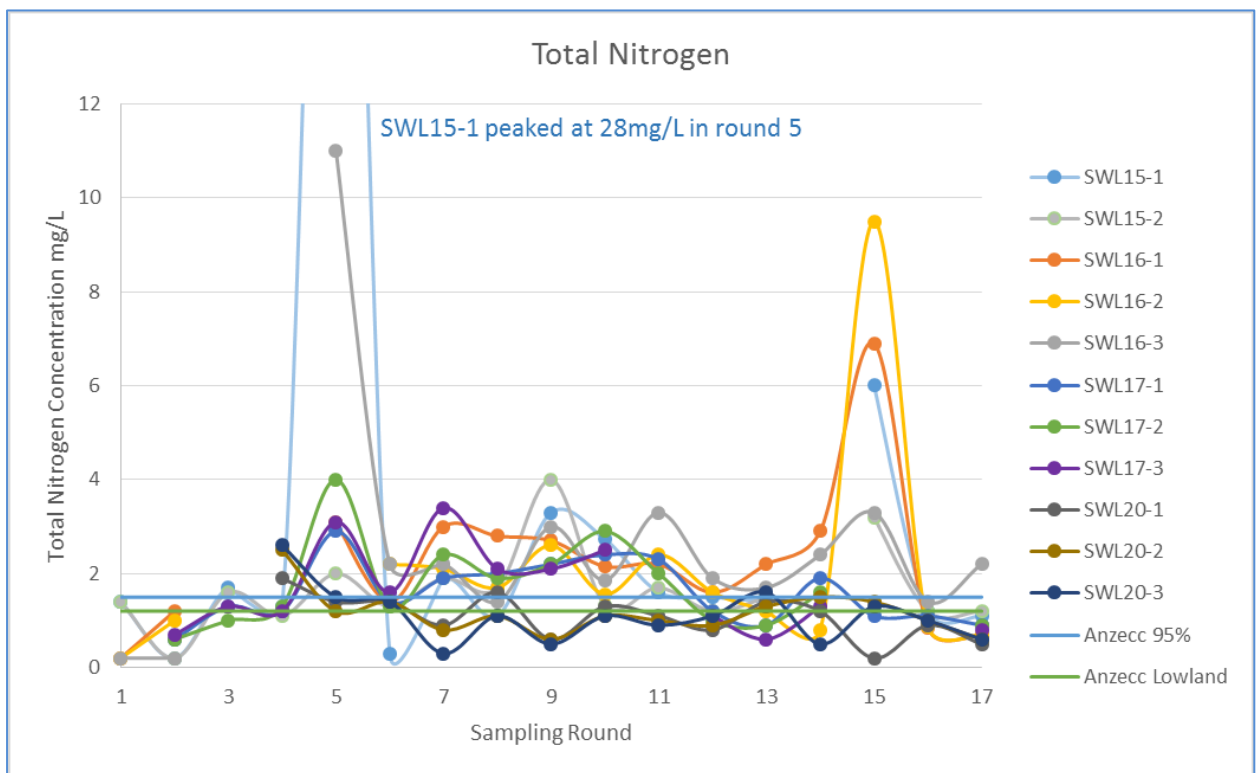
Graph 83: Kjeldahl nitrogen total concentrations over the sampling period.



Graph 84: Kjeldahl nitrogen total concentrations over the sampling period.



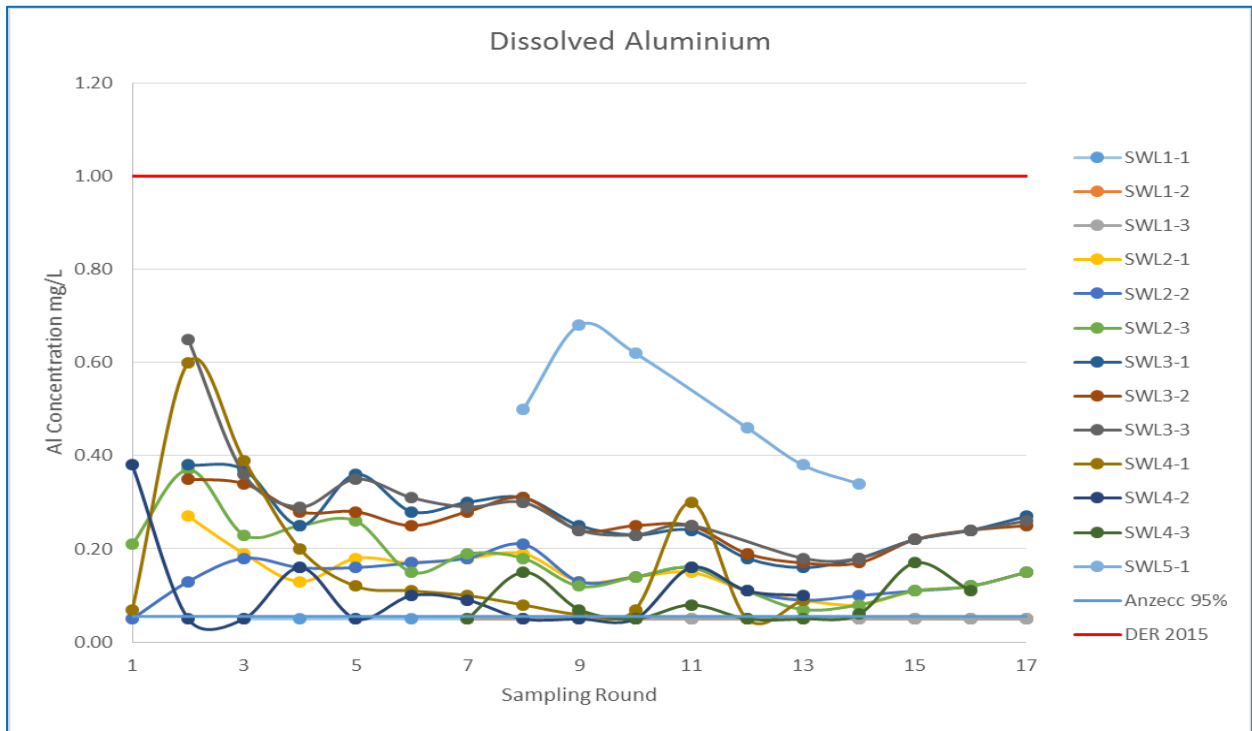
Graph 85: Total nitrogen concentrations over the sampling period.



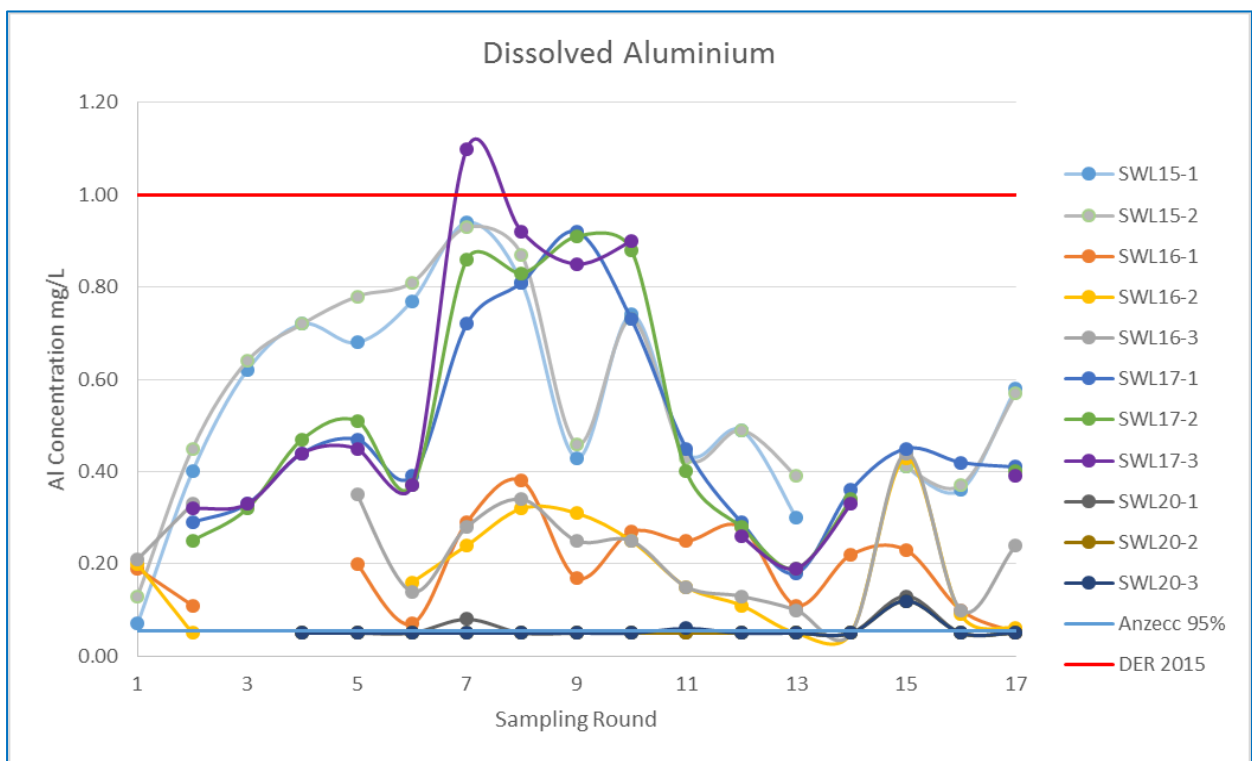
Graph 86: Total nitrogen concentrations over the sampling period.

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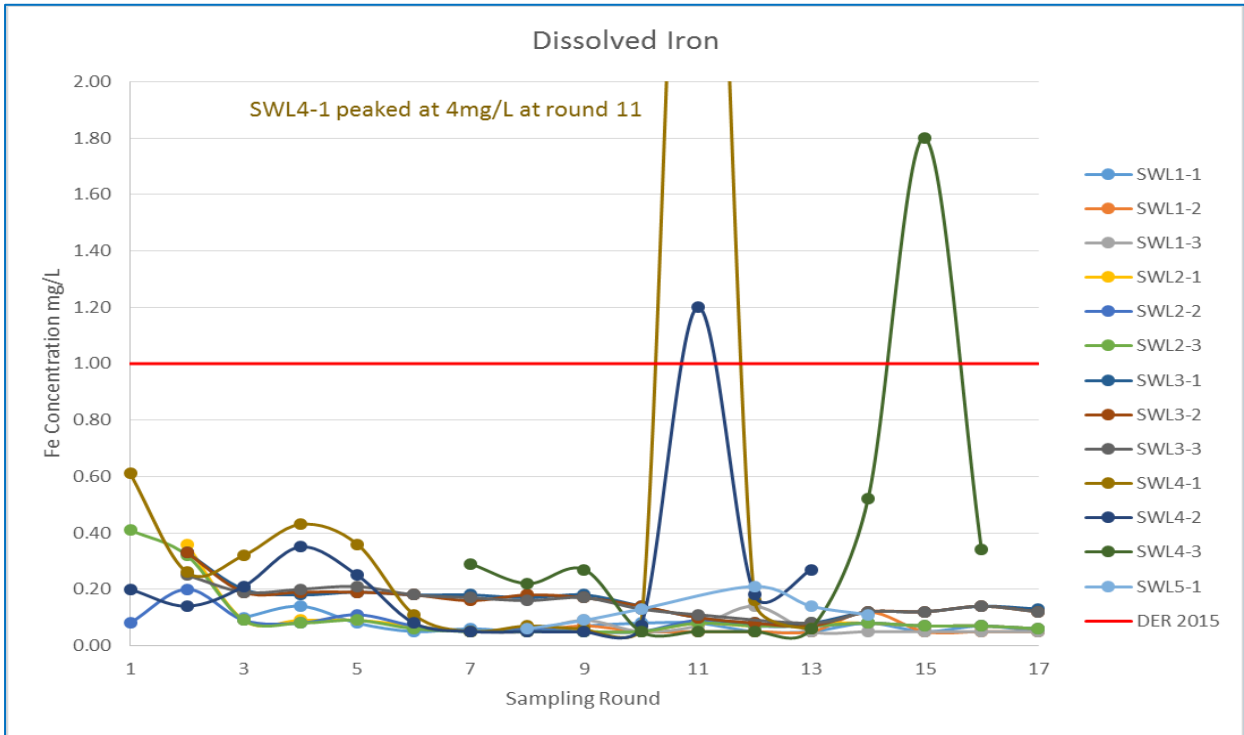
Graph 87: Dissolved Al concentrations over the sampling period.



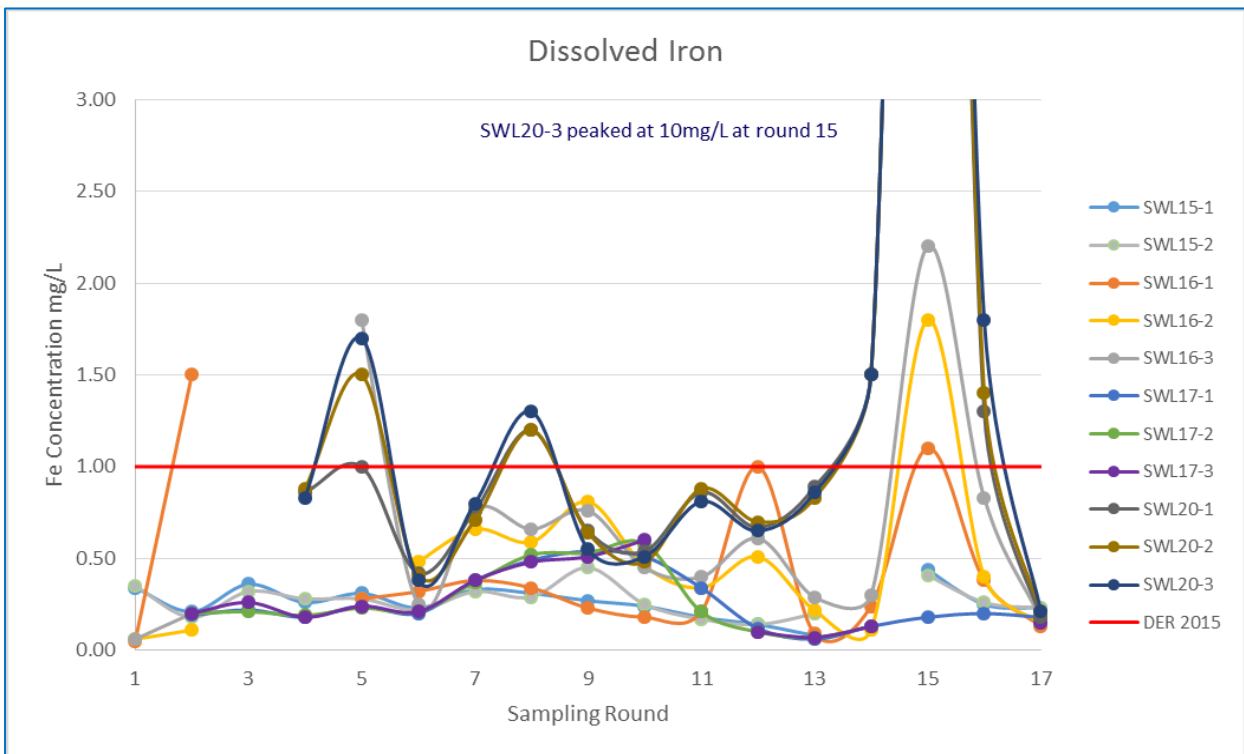
Graph 88: Dissolved Al concentrations over the sampling period.

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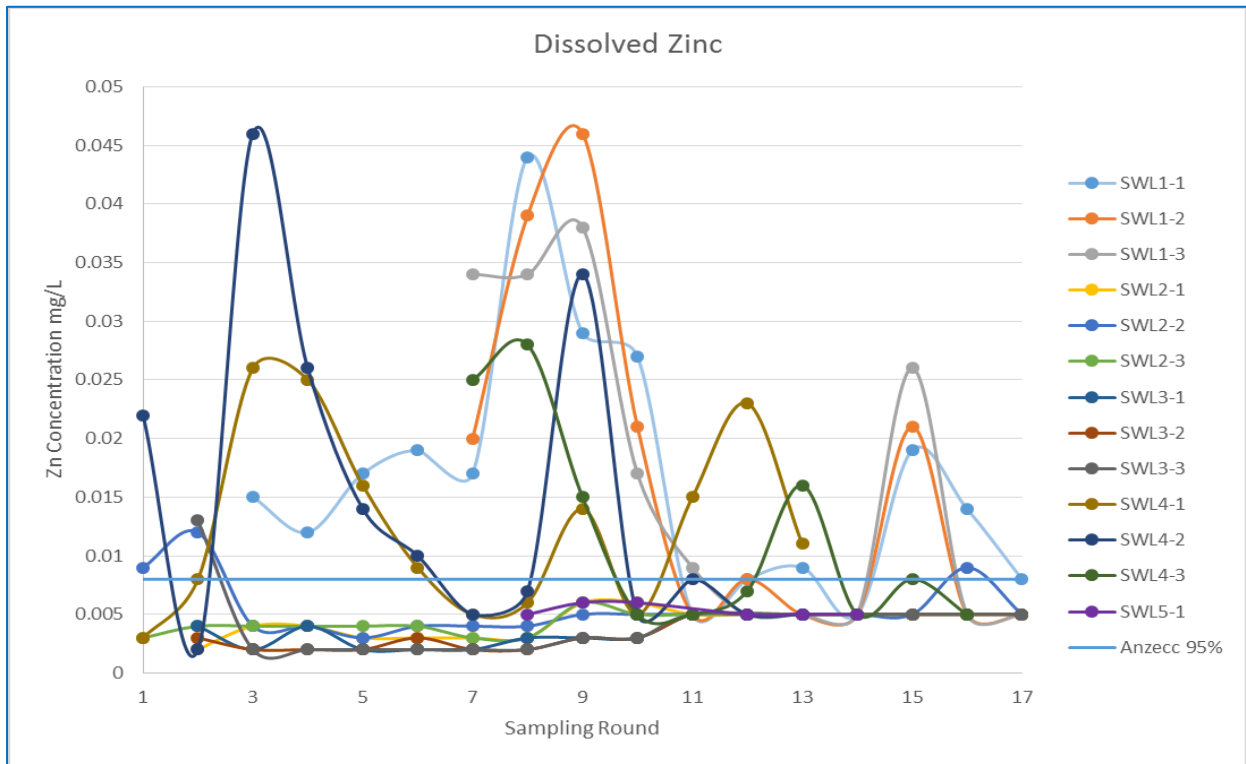
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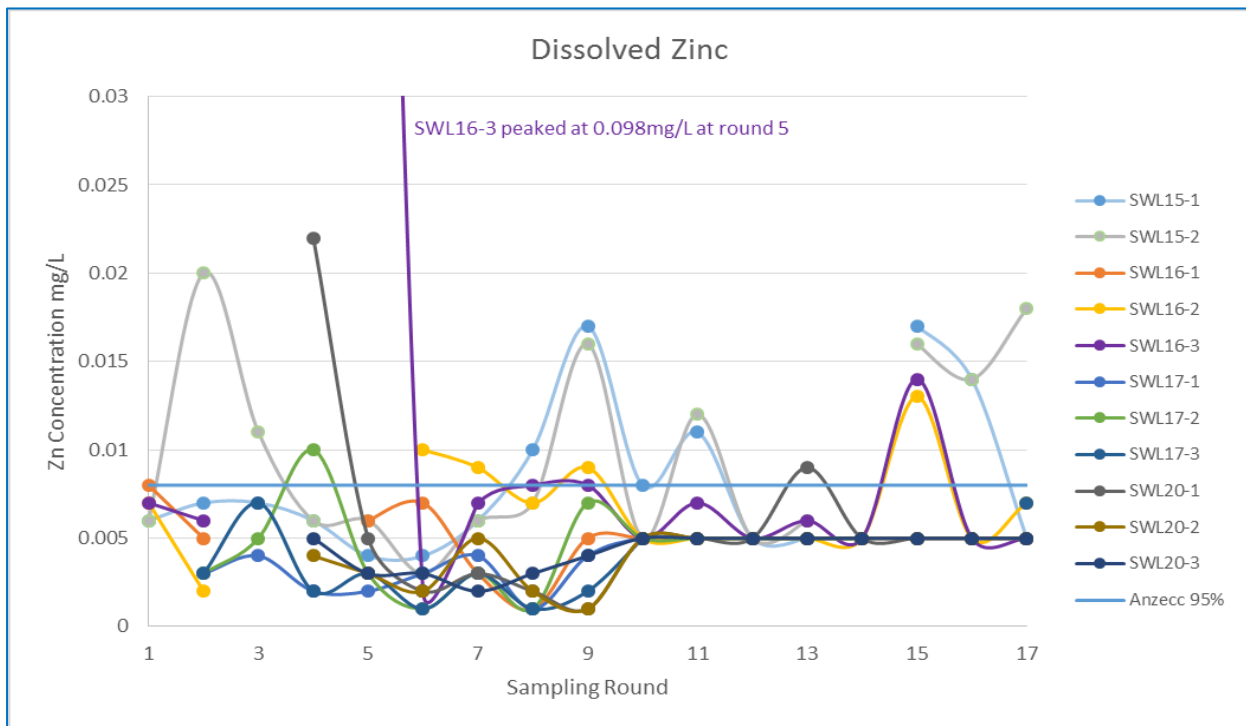
Graph 89: Dissolved Fe concentrations over the sampling period.



Graph 90: Dissolved Fe concentrations over the sampling period.



Graph 91: Dissolved Zn concentrations over the sampling period.



Graph 92: Dissolved Zn concentrations over the sampling period.



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Field Parameter Data

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Field Parameter Interpretations – Groundwater

A review of field parameter data with average, minimum and maximum concentrations along with interpretations of the data.

Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
pH (pH units)	MW55	5.98	5.54	6.29	Indicates mildly acidic to neutral groundwater conditions.
	MW1	6.50	6.09	7.02	
	MW2	6.22	5.15	6.97	
	MW3	6.16	5.92	6.35	
	MW4	6.32	5.75	7.02	
	MW5	5.26	4.61	6.10	
	MW6	5.26	4.62	6.03	
	MW10	5.89	5.23	6.35	
	MW11	4.29	3.84	4.83	Indicates strongly acidic to mildly acidic groundwater conditions.
	MW12	4.30	3.82	5.07	
	MW26	4.25	3.66	5.02	
	MW27	4.17	3.35	5.19	
	MW28	4.45	4.27	4.60	
	MW29	4.74	3.87	5.91	
	MW30	4.92	3.82	6.05	
	MW31	5.05	4.47	5.84	
	MW32	5.50	5.28	5.80	Indicates strongly acidic to mildly acidic groundwater conditions.
	MW36	5.94	5.21	6.74	
	MW37	5.51	4.71	6.69	
	MW38	5.74	5.20	6.09	
	MW39	6.04	5.31	6.69	
	MW40	4.91	4.73	5.28	
MW41	3.69	3.46	4.34	Indicates acidic to mildly acidic groundwater conditions.	
MW42	4.70	4.03	5.28		
MW50	5.49	5.19	5.88		
MW51	5.49	5.12	5.94		
	MW52	6.00	4.82	6.56	

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
Adjusted Redox Potential (mV)	MW55	269	128	364	Indicates a mildly oxidising to a strongly oxidising environment
	MW1	313	249	392	
	MW2	221	22	335	
	MW3	147	1	287	
	MW4	286	206	385	
	MW5	183	67	309	
	MW6	211	73	313	
	MW10	219	120	342	
	MW11	347	198	523	
	MW12	444	339	586	
	MW26	371	153	489	
	MW27	280	189	423	
	MW28	328	275	412	
	MW29	223	152	305	
	MW30	342	268	444	
	MW31	210	103	330	
	MW32	134	88	228	
	MW36	276	211	363	
	MW37	235	131	371	
	MW38	99	55	156	
	MW39	130	35	297	
	MW40	183	129	231	
	MW41	326	189	496	
MW42	220	147	329		
MW50	236	123	356		
MW51	180	81	298		
MW52	302	206	420		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
TDS (mg/L)	MW55	543	416	693	Indicates groundwater conditions are fresh
	MW1	330	202	415	
	MW2	233	136	426	
	MW3	180	122	260	
	MW4	112	65	159	
	MW5	129	72	245	
	MW6	385	111	1,006	
	MW10	176	117	342	
	MW11	406	260	553	Indicates groundwater conditions are fresh
	MW12	199	116	340	
	MW26	277	55	442	
	MW27	156	65	325	
	MW28	191	163	221	
	MW29	206	128	280	
	MW30	133	106	195	
	MW31	222	130	460	
	MW32	349	208	605	Indicates groundwater conditions are fresh to brackish
	MW36	84	56	130	
	MW37	70	47	91	
	MW38	885	318	3,393	
	MW39	310	224	765	
	MW40	191	130	232	
	MW41	474	345	918	
MW42	130	109	150		
MW50	5,557	3,203	6,572		
MW51	2,738	1,086	5,101		
MW52	14,822	5,460	24,687		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
DO (mg/L)	MW55	0.54	0.04	1.44	Indicates anaerobic to aerobic conditions in groundwater
	MW1	2.87	0.47	6.06	
	MW2	2.82	0.16	8.47	
	MW3	0.96	0.11	2.66	
	MW4	0.75	0.07	1.73	
	MW5	0.73	0.05	2.66	
	MW6	1.00	0.03	2.69	
	MW10	2.04	0.06	6.91	
	MW11	1.30	0.04	4.70	
	MW12	2.50	0.03	7.38	
	MW26	1.66	0.07	5.46	
	MW27	0.38	0.06	1.56	
	MW28	0.18	0.07	0.44	
	MW29	0.26	0.08	0.62	
	MW30	1.07	0.27	2.24	
	MW31	0.38	0.08	1.59	
	MW32	0.22	0.07	0.72	
	MW36	1.13	0.18	2.88	
	MW37	1.83	0.12	4.84	
	MW38	0.26	0.05	1.41	
	MW39	0.87	0.10	4.94	
	MW40	0.19	0.11	1.35	
	MW41	0.58	0.08	1.57	
MW42	0.71	0.10	2.71		
MW50	0.99	0.09	8.15		
MW51	0.78	0.01	6.30		
MW52	1.62	0.09	5.41		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
Temperature (°C)	MW55	22.24	19.10	24.83	Indicates variable groundwater conditions, the observable drop in temperature is consistent with expected seasonal variation.
	MW1	21.19	18.27	22.98	
	MW2	20.54	15.53	23.79	
	MW3	21.79	16.30	26.40	
	MW4	21.10	16.52	26.40	
	MW5	20.75	16.33	23.30	
	MW6	21.87	17.83	26.50	
	MW10	22.04	17.18	25.42	
	MW11	19.52	16.71	21.15	
	MW12	19.28	17.05	20.84	
	MW26	20.01	17.90	22.05	
	MW27	19.20	17.43	20.63	
	MW28	19.59	16.84	20.59	
	MW29	19.40	17.87	20.75	
	MW30	20.28	19.15	21.37	
	MW31	20.36	14.31	23.84	
	MW32	19.66	15.35	22.52	
	MW36	22.41	17.81	25.67	
	MW37	21.78	16.38	26.55	
	MW38	18.36	13.60	22.10	
	MW39	19.26	13.80	22.70	
	MW40	18.28	15.80	20.26	
	MW41	22.90	14.20	26.41	
MW42	19.01	15.06	22.30		
MW50	21.37	16.15	25.10		
MW51	20.48	15.48	23.67		
MW52	20.73	14.10	26.24		

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Field Parameter Interpretations – Surface water

A review of field parameter data with average, minimum and maximum concentrations along with interpretations of the data.

Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
pH (pH units)	SWL1-1	6.34	5.81	6.84	Indicates mildly acidic to neutral surface water conditions.
	SWL1-2	6.39	5.89	6.94	
	SWL1-3	6.33	5.88	7.03	
	SWL2-1	6.95	5.93	7.63	Indicates mildly acidic to neutral surface water conditions.
	SWL2-2	6.96	6.05	7.96	
	SWL2-3	6.92	6.12	7.66	
	SWL3-1	6.97	6.35	7.63	Indicates mildly acidic to neutral surface water conditions.
	SWL3-2	7.00	6.55	7.56	
	SWL3-3	7.08	6.58	7.71	
	SWL4-1	6.13	5.73	7.07	Indicates mildly acidic to neutral surface water conditions.
	SWL4-2	6.18	5.90	6.92	
	SWL4-3	6.21	5.86	6.95	
	SWL5-1	5.62	4.93	6.39	Indicates acidic to mildly acidic surface water conditions.
	SWL15-1	5.12	4.54	6.08	Indicates strongly acidic to neutral surface water conditions.
	SWL15-2	5.34	4.27	7.64	
	SWL16-1	6.26	6.02	6.74	Indicates mildly acidic to neutral surface water conditions.
	SWL16-2	6.39	5.82	7.15	
	SWL16-3	6.31	5.70	7.20	
	SWL17-1	4.11	3.67	5.13	Indicates strongly acidic to acidic surface water conditions.
	SWL17-2	4.03	3.57	4.73	
SWL17-3	4.04	3.46	4.87		
SWL20-1	6.20	5.67	6.74	Indicates mildly acidic to neutral surface water conditions.	
SWL20-2	6.31	5.73	6.88		
SWL20-3	6.35	5.74	6.83		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
Adjusted Redox Potential (mV)	SWL1-1	292.95	168.30	372.20	Indicates a mildly oxidising to a strongly oxidising to oxidising environment
	SWL1-2	251.30	96.90	379.0	
	SWL1-3	276.34	178.90	381.50	
	SWL2-1	296.36	226.0	406.40	Indicates a strongly oxidising environment
	SWL2-2	291.58	160.0	468.20	
	SWL2-3	284.59	209.10	471.40	
	SWL3-1	253.16	190.90	341.50	Indicates a strongly oxidising environment
	SWL3-2	254.39	180.70	348.50	
	SWL3-3	253.77	189.80	327.80	
	SWL4-1	267.98	206.50	315.90	Indicates a strongly oxidising environment
	SWL4-2	256.88	149.80	330.80	
	SWL4-3	234.33	172.30	308.80	
	SWL5-1	347.25	253.50	438.90	Indicates a strongly oxidising environment
	SWL15-1	299.76	152.90	391.50	Indicates a strongly oxidising environment
	SWL15-2	292.43	164.0	424.60	
	SWL16-1	194.16	145.50	260.10	Indicates a mildly oxidising to a strongly oxidising to oxidising environment
	SWL16-2	169.39	69.40	308.10	
	SWL16-3	191.94	58.0	316.20	
	SWL17-1	307.13	208.30	440.60	Indicates a strongly oxidising environment
	SWL17-2	320.15	154.90	476.70	
SWL17-3	319.84	234.30	492.90		
SWL20-1	243.95	-50.10	378.40	Indicates a mildly reducing to a strongly oxidising to oxidising environment	
SWL20-2	241.75	-23.90	368.80		
SWL20-3	222.90	-11.90	384.20		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
TDS (mg/L) ¹	SWL1-1	239	65.	319	Indicates surface water conditions are fresh
	SWL1-2	245	85	329	
	SWL1-3	217	91	345	
	SWL2-1	217	130	269	Indicates surface water conditions are fresh
	SWL2-2	224	130	267	
	SWL2-3	223	130	267	
	SWL3-1	237	193	273	Indicates surface water conditions are fresh
	SWL3-2	235	189	267	
	SWL3-3	234	190	280	
	SWL4-1	402	154	540	Indicates surface water conditions are fresh
	SWL4-2	378	125	458	
	SWL4-3	376	132	507	
	SWL5-1	114	84	175	Indicates surface water conditions are fresh
	SWL15-1	219	87	332	Indicates surface water conditions are fresh
	SWL15-2	233	189	338	
	SWL16-1	393	195	706	Indicates surface water conditions are fresh
	SWL16-2	292	187	442	
	SWL16-3	446	205	1,165	
	SWL17-1	221	150	438	Indicates surface water conditions are fresh
	SWL17-2	227	142	483	
SWL17-3	248	150	513		
SWL20-1	3,221	2,067	6,825	Indicates surface water conditions are brackish	
SWL20-2	3,371	2,218	6,994		
SWL20-3	3,433	2,022	7,573		

¹ Calculated by multiplying the EC value by 0.65.

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
DO (mg/L)	SWL1-1	4.33	0.74	8.69	Indicates anaerobic to aerobic conditions in surface water
	SWL1-2	2.94	0.04	9.36	
	SWL1-3	3.68	0.07	9.86	
	SWL2-1	9.11	8.18	10.43	Indicates aerobic conditions in surface water
	SWL2-2	9.04	8.01	10.01	
	SWL2-3	9.04	8.00	10.17	
	SWL3-1	8.85	7.76	10.60	Indicates aerobic conditions in surface water
	SWL3-2	8.78	7.82	9.76	
	SWL3-3	8.83	7.69	10.35	
	SWL4-1	4.67	0.50	7.41	Indicates anaerobic to aerobic conditions in surface water
	SWL4-2	5.74	0.29	11.97	
	SWL4-3	6.22	0.28	17.36	
	SWL5-1	7.43	5.93	9.48	Indicates aerobic conditions in surface water
	SWL15-1	4.47	0.51	9.46	Indicates anaerobic to aerobic conditions in surface water
	SWL15-2	3.61	0.05	8.08	
	SWL16-1	3.16	0.09	12.48	Indicates anaerobic to aerobic conditions in surface water
	SWL16-2	4.31	0.34	11.57	
	SWL16-3	4.47	0.14	12.80	
	SWL17-1	2.49	0.10	6.71	Indicates anaerobic to aerobic conditions in surface water
	SWL17-2	2.76	0.00	6.92	
SWL17-3	2.26	0.10	7.52		
SWL20-1	4.64	1.12	8.18	Indicates anaerobic to aerobic conditions in surface water	
SWL20-2	3.30	0.00	8.22		
SWL20-3	3.30	0.00	8.53		

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Parameter	Sample ID	Average	Min Conc.	Max Conc.	Comments
Temperature (°C)	SWL1-1	18.80	14.27	23.70	Indicates variable surface water conditions, the observable drop in temperature is consistent with expected seasonal variation.
	SWL1-2	18.01	12.91	24.62	
	SWL1-3	18.68	12.03	25.51	
	SWL2-1	21.74	14.32	31.24	
	SWL2-2	12.25	13.95	28.64	
	SWL2-3	21.48	14.22	29.60	
	SWL3-1	21.25	14.45	27.16	
	SWL3-2	21.44	14.47	28.25	
	SWL3-3	21.53	14.25	27.57	
	SWL4-1	20.54	16.76	24.20	
	SWL4-2	21.44	14.52	25.99	
	SWL4-3	20.24	11.98	25.39	
	SWL5-1	17.59	11.94	23.61	
	SWL15-1	19.27	10.61	26.83	
	SWL15-2	19.12	10.54	26.90	
	SWL16-1	17.28	10.73	22.68	
	SWL16-2	17.43	10.73	23.79	
	SWL16-3	18.31	10.18	25.70	
	SWL17-1	16.92	10.79	21.19	
	SWL17-2	16.82	10.86	20.84	
SWL17-3	16.69	10.26	20.17		
SWL20-1	18.01	11.79	23.56		
SWL20-2	18.09	11.85	23.79		
SWL20-3	17.92	12.12	23.61		



APPENDIX K

Analytical Data Exceedances

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Adopted Criteria Summary Exceedances - Groundwater

A review of laboratory data with average concentrations exceeding the adopted criteria is detailed below, along with minimum and maximum concentrations encountered during the investigation.

COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Metals					
Total Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	MW1	2.37	0.42	7.20
		MW2	3.39	0.20	14.00
		MW3	0.66	0.15	2.40
		MW4	0.39	0.06	1.90
		MW5	6.98	0.43	22.00
		MW6	8.93	0.16	29.00
		MW10	4.52	0.12	24.00
		MW11	6.45	3.10	12.00
		MW12	3.56	1.90	6.20
		MW26	2.19	0.69	4.20
		MW27	0.84	0.49	1.40
		MW28	0.77	0.52	1.00
		MW29	2.28	1.20	3.00
		MW30	0.64	0.33	1.20
		MW31	10.96	0.79	60.00
		MW32	0.85	0.24	1.80
		MW36	0.12	<0.05	0.38
		MW37	0.25	0.15	0.46
		MW38	6.73	0.36	49.00
		MW39	0.16	<0.05	0.36
		MW40	1.40	0.84	1.80
		MW41	1.79	1.00	2.60
		MW42	0.70	0.31	1.70
MW50	7.82	0.14	56.00		
MW51	1.11	0.07	3.80		
MW52	2.75	0.16	23.00		
MW55	0.94	0.16	5.60		
Total Iron (mg/L)	DER 2015: 1.00	MW10	12.08	0.46	36.00
		MW11	5.08	0.34	15.00
		MW12	2.70	0.46	8.10
		MW27	1.37	0.30	4.80
		MW38	5.11	0.25	34.00
		MW50	5.55	0.68	18.00
		MW51	12.23	2.70	46.00
		MW52	2.94	0.25	18.0
Dissolved Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	MW1	0.14	<0.05	1.10
		MW2	0.12	<0.05	0.28
		MW3	0.31	<0.05	0.81
		MW4	0.07	<0.05	0.12
		MW5	0.99	0.29	2.00
		MW6	0.55	0.16	1.70
		MW10	0.23	<0.05	0.47

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Metals					
Dissolved Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	MW11	4.45	1.30	7.00
		MW12	2.75	1.20	5.50
		MW26	1.35	0.35	2.10
		MW27	0.67	0.33	1.10
		MW28	0.53	0.35	0.67
		MW29	1.27	0.72	2.00
		MW30	0.42	0.13	0.60
		MW31	1.39	0.41	3.10
		MW32	0.50	0.17	1.20
		MW36	0.06	<0.05	0.10
		MW37	0.17	<0.05	0.27
		MW38	0.65	0.19	3.70
		MW39	0.11	<0.05	0.27
		MW40	1.12	0.56	1.50
		MW41	1.50	0.91	2.00
		MW42	0.37	0.15	1.00
		MW50	0.06	<0.05	0.26
MW51	0.06	<0.05	0.12		
MW52	0.32	<0.05	1.00		
MW55	0.20	0.11	0.30		
Dissolved Arsenic (mg/L)	ANZECC FW 95%: 0.024	No monitoring wells above adopted guidelines			
Dissolved Cadmium (mg/L)	ANZECC FW 95%: 0.0002	MW52	0.0010	0.00023	0.0026
Dissolved Copper (mg/L)	ANZECC FW 95%: 0.0014	MW5	0.0021	<0.001	0.006
		MW6	0.0014	<0.001	0.004
		MW10	0.0015	<0.001	0.003
		MW31	0.0014	<0.001	0.003
		MW41	0.0036	<0.001	0.009
		MW52	0.0194	<0.001	0.110
Dissolved Iron (mg/L)	DER 2015: 1.00	MW10	1.57	0.08	4.80
		MW11	2.28	0.06	8.40
		MW38	1.00	0.08	4.70
		MW51	3.32	<0.05	15.0
Dissolved Lead (mg/L)	ANZECC FW 95%: 0.0034	MW11	0.0036	<0.001	0.008
Dissolved Manganese (mg/L)	ANZECC FW 95%: 1.9	No monitoring wells above guidelines			
Dissolved Mercury(mg/L)	ANZECC FW 95%: 0.00006	No monitoring wells above guidelines			
Dissolved Nickel (mg/L)	ANZECC FW 95%: 0.011	MW52	0.0165	0.006	0.028
Dissolved Selenium (mg/L)	ANZECC FW 95%: 0.011	MW52	0.0123	0.003	0.021

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Metals					
Dissolved Zinc (mg/L)	ANZECC FW 95%: 0.008	MW2	0.0090	<0.001	0.080
		MW30	0.0086	<0.001	0.038
		MW38	0.0481	0.002	0.450
		MW41	0.0203	0.002	0.150
		MW50	0.0093	<0.005	0.036
		MW52	0.4569	0.006	1.900

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
ASS Indicators					
pH (pH units)	DER 2015: Lower – 6 Upper – 8	MW5	5.4	4.7	6.5
		MW6	6.0	4.9	7.2
		MW11	4.2	3.9	4.4
		MW12	4.2	3.9	4.6
		MW26	4.2	3.7	5.2
		MW27	4.0	3.4	4.7
		MW28	4.4	4.3	4.5
		MW29	4.6	4.0	5.2
		MW30	5.4	3.8	7.2
		MW31	5.0	4.2	5.8
		MW32	5.9	5.5	6.4
		MW37	5.6	4.6	6.8
		MW40	4.7	3.5	5.2
		MW41	3.6	3.1	4.9
		MW42	4.3	4.1	4.4
MW51	5.9	4.2	7.6		
Acidity (as CaCO ₃) (mg/L)	DER 2015: > 40	MW2	52	<10	510
		MW3	91	<10	610
		MW4	74	<10	640
		MW5	52	10	350
		MW6	58	11	260
		MW11	58	29	88
		MW26	51	10	85
		MW27	45	25	89
		MW29	49	23	82
		MW31	49	15	98
		MW38	49	15	130
		MW40	45	19	110
		MW41	117	23	150
		MW42	101	23	1,100
		MW50	47	17	110
MW51	44	13	99		
Alkalinity (total) as CaCO ₃ * (mg/L)	DER 2015: Lower – 60 Upper – 180	MW4	53	37	85
		MW5	22	<20	42
		MW6	39	<20	140
		MW11	<20	<20	<20
		MW12	<20	<20	<20
		MW26	<20	<20	<20
		MW27	<20	<20	<20
		MW28	<20	<20	<20
		MW29	21	<20	37
		MW30	26	<20	63
		MW31	<20	<20	<20
		MW32	22	<20	30
		MW36	23	<20	35
		MW37	<20	<20	<20
MW39	52	34	74		

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ASS Indicators					
Alkalinity (total) as CaCO ₃ * (mg/L)	DER 2015: Lower – 60 Upper – 180	MW40	19	<10	<20
		MW41	19	<10	<20
		MW42	<20	<20	<20
		MW50	32	<20	52
		MW51	24	<20	71
Acidity : Alkalinity (ratio)	DER 2015: > 1	MW4	1.6	0.1	16.8
		MW5	2.8	0.3	17.5
		MW6	2.7	0.2	13.0
		MW11	3.3	1.5	5.7
		MW12	2.1	0.6	4.2
		MW26	3.0	0.5	8.1
		MW27	2.6	1.3	5.9
		MW28	1.4	0.7	2.7
		MW29	2.8	1.2	7.6
		MW31	2.9	0.8	6.9
		MW32	1.6	0.7	3.5
		MW37	1.2	0.5	2.9
		MW40	2.6	1.0	5.5
		MW41	7.0	1.2	13.0
		MW42	5.3	1.2	55.0
MW50	1.5	0.7	5.5		
MW51	2.3	0.4	5.5		
Alkalinity : Sulfate (ratio)	DER 2015: < 5.0	MW5	4.368	4.0	7.1
		MW6	1.012	0.1	2.8
		MW11	0.471	0.1	0.9
		MW12	1.265	0.3	2.3
		MW26	1.620	0.2	4.0
		MW27	1.783	0.3	4.0
		MW28	2.754	2.0	3.6
		MW29	0.992	0.2	1.7
		MW30	4.172	0.8	12.6
		MW31	2.641	0.1	4.0
		MW32	2.901	0.7	4.4
		MW36	4.318	0.7	4.6
		MW37	3.710	1.7	4.0
MW40	2.858	0.3	4.0		
Alkalinity : Sulfate (ratio)	DER 2015: < 5.0	MW41	1.353	0.3	4.0
		MW42	3.564	1.5	4.0
		MW50	0.435	0.1	0.9
		MW51	0.441	0.1	1.9
		MW52	0.268	0.02	0.45
		MW55	1.940	0.4	2.6

*Values of Alkalinity (Bicarbonate as CaCO₃) used to replace missing data from events 4 and 5.

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Nutrients					
Ammonia as N (mg/L)	ANZECC FW 95%: 0.90	No monitoring wells above guidelines			
Nitrate & Nitrite (as N) (mg/L)	ANZECC FW 95%: 0.1	MW1	10.32	0.39	29.0
		MW2	1.22	0..10	3.8
		MW3	1.15	<0.05	2.6
		MW4	1.81	<0.05	5.4
		MW5	0.23	<0.05	1.1
		MW6	4.21	<0.05	32.0
		MW10	3.00	<0.05	6.0
		MW11	0.74	<0.05	2.4
		MW12	0.16	<0.05	1.1
		MW26	0.86	0.08	2.4
		MW28	2.45	2.3	2.6
		MW30	3.03	1.4	7.0
		MW31	1.21	<0.05	12.0
		MW36	2.81	1.4	3.9
		MW37	0.33	<0.05	1.40
		MW39	0.32	<0.05	2.5
		MW41	1.05	<0.05	5.7
MW50	0.12	<0.05	0.93		
MW52	37.14	25	48.0		
MW55	2.82	<0.05	8.9		
Nitrate (as N) (mg/L)	ANZECC FW 95%: 0.70	MW1	10.56	0.38	23.0
		MW2	0.77	<0.02	3.8
		MW3	0.94	<0.02	2.6
		MW4	1.50	<0.02	5.4
		MW6	3.36	<0.02	31.0
		MW10	2.77	0.03	6.0
		MW28	2.98	2.10	4.5
		MW30	2.96	1.40	6.9
		MW31	0.96	<0.02	12.0
		MW36	2.93	1.30	4.4
		MW41	0.94	<0.02	5.6
		MW52	37.75	25.0	47.0
		MW55	2.56	<0.02	8.7
Total Nitrogen (mg/L)	ANZECC FW 95%: 1.5	MW1	8.06	1.1	26.0
		MW3	2.89	0.4	8.3
		MW4	2.42	<0.2	7.5
		MW5	1.89	0.5	4.7
		MW6	4.38	0.5	36.0
		MW10	4.76	0.3	20.0
		MW26	1.63	<0.05	3.3
		MW28	4.03	3.2	4.8
		MW30	2.90	0.4	8.5
		MW31	3.23	0.6	8.9
		MW32	3.00	0.6	10.0
MW36	3.36	0.45	5.1		

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Nutrients					
Total Nitrogen (mg/L)	ANZECC FW 95%: 1.5	MW37	1.69	<0.2	3.7
		MW38	3.72	1.2	16.0
		MW39	1.85	0.4	3.9
		MW41	4.29	0.7	8.3
		MW52	38.59	2.0	150.0
		MW55	2.97	0.8	12.1
Total phosphorus (mg/L)	ANZECC FW 95%: 0.06	MW1	0.138	<0.05	2.60
		MW2	0.118	<0.05	0.25
		MW3	0.333	<0.05	1.1
		MW4	0.104	<0.05	0.38
		MW5	0.069	<0.05	0.16
		MW6	0.064	<0.05	0.13
		MW10	0.07	<0.05	0.14
		MW26	0.076	<0.05	0.23
		MW27	0.151	<0.05	0.77
		MW29	0.118	<0.05	0.72
		MW30	0.083	<0.05	0.31
		MW31	1.03	0.07	2.60
		MW32	0.64	0.24	1.20
		MW36	0.129	<0.05	0.210
		MW37	0.366	0.11	0.72
		MW38	0.71	0.34	1.30
		MW39	0.98	0.63	1.70
		MW40	0.097	<0.05	0.56
		MW41	0.598	<0.05	0.99
		MW42	0.1	<0.05	0.13
MW50	0.18	<0.05	0.62		
MW51	0.16	<0.05	0.56		
MW52	0.64	<0.05	1.7		
Reactive phosphorus (mg/L)	ANZECC FW 95%: 0.03	MW1	0.06	<0.05	0.12
		MW2	<0.05	<0.05	<0.05
		MW3	0.10	<0.05	0.64
		MW4	0.06	<0.05	0.13
		MW5	<0.05	<0.05	<0.05
		MW6	<0.05	<0.05	<0.05
		MW10	<0.05	<0.05	<0.05
		MW11	<0.05	<0.05	<0.05
		MW12	<0.05	<0.05	<0.05
		MW26	<0.05	<0.05	<0.05
		MW27	<0.05	<0.05	<0.05
		MW28	<0.05	<0.05	<0.05
		MW29	0.06	<0.05	0.13
		MW30	0.05	<0.05	0.06
		MW31	0.86	<0.05	2.1
		MW32	0.53	0.20	1.2
		MW36	0.10	0.07	0.13
MW37	0.24	0.14	0.44		

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Nutrients					
Reactive phosphorus (mg/L)	ANZECC FW 95%: 0.03	MW38	0.53	0.05	1.0
		MW39	0.83	0.23	1.4
		MW40	0.10	<0.05	0.54
		MW41	0.56	<0.05	0.95
		MW42	<0.05	<0.05	<0.05
		MW50	<0.05	<0.05	<0.05
		MW51	0.09	<0.05	0.44
		MW52	0.27	<0.05	0.73
		MW55	<0.05	<0.05	<0.05

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Adopted Criteria Summary Exceedances – Surface water

A review of laboratory data with average concentrations exceeding the adopted criteria is detailed below, along with minimum and maximum concentrations encountered during the investigation.

COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Metals					
Total Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	SWL1-1	0.06	<0.05	0.10
		SWL1-3	0.07	<0.05	0.20
		SWL2-1	0.19	0.14	0.29
		SWL2-2	0.21	0.11	0.43
		SWL2-3	0.24	0.14	0.52
		SWL3-1	0.34	0.23	0.74
		SWL3-2	0.33	0.25	0.57
		SWL3-3	0.39	0.24	1.00
		SWL4-1	0.36	0.10	0.85
		SWL4-2	0.17	0.06	0.56
		SWL4-3	0.21	0.12	0.52
		SWL5-1	0.65	0.43	0.84
		SWL15-1	0.88	0.10	2.60
		SWL15-2	0.77	0.23	1.40
		SWL16-1	0.43	0.07	0.38
		SWL16-2	0.23	<0.05	0.43
		SWL16-3	0.64	<0.05	4.40
		SWL17-1	0.62	0.36	1.10
		SWL17-2	0.62	0.35	1.30
		SWL17-3	0.65	0.34	1.10
SWL20-1	0.08	<0.05	0.17		
SWL20-2	0.07	<0.05	0.15		
SWL20-3	0.07	<0.05	0.15		
Total Iron (mg/L)	DER 2015: 1.00	SWL4-1	1.60	0.22	5.6
		SWL16-1	1.04	0.11	6.4
		SWL16-3	1.57	0.29	8.2
		SWL20-1	3.62	1.10	24.0
		SWL20-2	3.66	1.10	25.0
		SWL20-3	3.72	1.20	25.0
Dissolved Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	SWL2-1	0.15	0.08	0.27
		SWL2-2	0.14	<0.05	0.21
		SWL2-3	0.17	0.07	0.37
		SWL3-1	0.26	0.16	0.38
		SWL3-2	0.25	0.17	0.35
		SWL3-3	0.29	0.18	0.65
		SWL4-1	0.17	0.05	0.60
		SWL4-2	0.11	<0.05	0.38
		SWL4-3	0.11	<0.05	0.38
		SWL5-1	0.50	0.34	0.68
		SWL15-1	0.55	0.07	0.94
		SWL15-2	0.57	0.13	0.93
		SWL16-1	0.20	<0.05	0.38
SWL16-2	0.18	<0.05	0.43		

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Metals					
		SWL16-3	0.22	<0.05	0.44
Dissolved Aluminium (mg/L)	ANZECC FW 95%: 0.055 DER 2015: 1.00	SWL17-1	0.48	0.18	0.93
		SWL17-2	0.50	0.19	0.91
		SWL17-3	0.53	0.19	1.1
		SWL20-1	0.06	<0.05	0.13
		SWL20-2	0.06	<0.05	0.12
		SWL20-3	0.06	<0.05	0.12
Dissolved Arsenic (mg/L)	ANZECC FW 95%: 0.024	No sample locations above guidelines			
Dissolved Cadmium (mg/L)	ANZECC FW 95%: 0.0002	No sample locations above guidelines			
Dissolved Copper (mg/L)	ANZECC FW 95%: 0.0014	SWL17-2	0.0035	<0.001	0.035
Dissolved Iron (mg/L)	DER 2015: 1.00	SWL20-1	1.44	0.18	10.0
		SWL20-2	1.48	0.21	10.0
		SWL20-3	1.52	0.21	10.0
Dissolved Lead (mg/L)	ANZECC FW 95%: 0.0034	No sample locations above guidelines			
Dissolved Manganese (mg/L)	ANZECC FW 95%: 1.9	No sample locations above guidelines			
Dissolved Mercury (mg/L)	ANZECC FW 95%: 0.00006	No sample locations above guidelines			
Dissolved Nickel (mg/L)	ANZECC FW 95%: 0.011	No sample locations above guidelines			
Dissolved Selenium (mg/L)	ANZECC FW 95%: 0.011	No sample locations above guidelines			
Dissolved Zinc (mg/L)	ANZECC FW 95%: 0.008	SWL1-1	0.017	<0.005	0.044
		SWL1-2	0.016	<0.005	0.046
		SWL1-3	0.017	<0.005	0.038
		SWL4-1	0.013	<0.005	0.026
		SWL4-2	0.015	<0.005	0.046
		SWL4-3	0.013	<0.005	0.028
		SWL15-1	0.008	<0.005	0.017
		SWL15-2	0.009	<0.005	0.020
		SWL16-3	0.013	<0.005	0.098

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
ASS Indicators					
pH (pH units)	ANZECC Lowland: Lower – 6.5 Upper – 8	SWL4-1	6.4	5.2	6.9
		SWL5-1	5.6	5.0	6.1
		SWL15-1	4.8	3.9	6.1
	DER 2015: Lower – 6 Upper – 8	SWL15-2	4.8	4.0	6.5
		SWL17-1	4.1	3.6	8.1
		SWL17-2	4.2	3.6	8.0
		SWL17-3	4.2	3.5	8.1
Acidity (as CaCO ₃) (mg/L)	DER 2015: > 40	SWL17-1	53	<10	170
		SWL17-2	46	<10	80
		SWL17-3	180	<10	1,800
Alkalinity (total) as CaCO ₃ (mg/L)	DER 2015: Lower – 60 Upper – 180	SWL1-1	45	<20	69
		SWL1-2	45	22	61
		SWL1-3	47	22	100
		SWL2-1	43	<20	71
		SWL2-2	42	<20	79
		SWL2-3	41	<20	72
		SWL4-1	21	<20	28
		SWL4-2	23	<20	41
		SWL4-3	28	<20	89
		SWL5-1	<20	<20	<20
		SWL15-1	20	<20	26
		SWL15-2	21	<20	37
		SWL16-1	55	42	71
		SWL16-2	45	34	72
		SWL16-3	51	<20	97
		SWL17-1	23	<20	73
		SWL17-2	24	<20	71
		SWL17-3	24	<20	68
		SWL20-1	32	<20	65
		SWL20-2	32	<20	76
SWL20-3	32	<20	68		
Acidity : Alkalinity (ratio)	DER 2015: > 1 DER 2015: > 0.5	SWL15-1	1.4	0.8	2.2
		SWL15-2	1.3	0.5	2.0
		SWL17-1	5.3	0.1	17.0
		SWL17-2	4.5	0.1	8.0
		SWL17-3	17.9	0.2	180.0
Sulfate : Chloride (ratio)	DER 2015: > 0.5	No sample locations above guidelines			
Alkalinity : Sulfate (ratio)	DER 2015: < 5.0	SWL1-1	2.7	0.5	7.5
		SWL1-2	2.6	1.1	4.8
		SWL2-1	2.3	0.3	7.1
		SWL2-2	2.4	0.4	7.9
		SWL2-3	2.3	0.4	5.9
		SWL4-1	1.2	0.3	5.6
		SWL4-2	1.1	0.3	4.8
SWL4-3	1.6	0.3	5.6		

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
ASS Indicators					
Alkalinity : Sulfate (ratio)	DER 2015: < 5.0	SWL5-1	2.3	1.2	3.8
		SWL15-1	3.3	1.4	5.2
		SWL15-2	3.6	0.2	7.4
		SWL16-1	2.7	1.6	6.1
		SWL16-2	3.8	1.1	6.8
		SWL16-3	3.6	1.0	8.0
		SWL17-1	3.0	0.6	7.3
		SWL17-2	3.2	0.8	7.1
		SWL17-3	3.1	0.8	6.8
		SWL20-1	1.4	0.1	13.0
		SWL20-2	1.5	0.1	15.2
		SWL20-3	1.4	0.1	13.6

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Nutrients					
Ammonia as N (mg/L)	ANZECC FW 95%: 0.90	No monitoring wells above guidelines			
Nitrate & Nitrite (as N) (mg/L)	ANZECC Lowland: 0.15	SWL1-1	0.66	<0.05	6.50
		SWL1-2	0.14	<0.05	0.42
	ANZECC FW 95%: 0.1	SWL3-1	0.12	<0.05	0.29
		SWL3-2	0.11	<0.05	0.28
		SWL3-3	0.12	<0.05	0.35
		SWL4-1	0.29	<0.05	1.50
		SWL4-2	0.12	<0.05	0.32
		SWL4-3	0.12	<0.05	0.31
		SWL16-2	0.18	<0.05	0.53
		SWL16-3	0.19	<0.05	0.74
Total Nitrogen (mg/L)	ANZECC Lowland: 1.2	SWL15-1	3.4	<0.2	28.0
		SWL15-2	1.7	<0.2	4.0
	ANZECC FW 95%: 1.5	SWL16-1	2.3	<0.2	6.9
		SWL16-2	2.0	<0.2	9.5
		SWL16-3	2.6	<0.2	11.0
		SWL17-1	1.6	0.6	2.9
		SWL17-2	1.7	0.6	4.0
		SWL17-3	1.7	0.6	3.4
		SWL20-1	1.3	<0.2	4.0
		SWL20-2	1.4	0.6	4.0
SWL20-3	1.3	0.5	3.9		
Total phosphorus (mg/L)	ANZECC Lowland: 0.065	SWL1-2	0.07	<0.05	0.27
		SWL2-1	0.17	<0.05	1.80
	ANZECC FW 95%: 0.06	SWL2-2	0.12	<0.05	0.88
		SWL2-3	0.12	<0.05	1.30
		SWL3-1	0.13	<0.05	1.30
		SWL3-2	0.13	<0.05	1.30
		SWL3-3	0.08	<0.05	0.45
		SWL4-1	0.17	<0.05	0.99
		SWL5-1	0.08	<0.05	0.20
		SWL15-1	0.32	<0.05	0.82
		SWL15-2	0.40	<0.05	1.30
		SWL16-1	1.04	<0.05	2.10
		SWL16-2	0.69	0.11	1.40
		SWL16-3	0.84	<0.05	1.90
		SWL17-1	0.13	<0.05	0.27
		SWL17-2	0.12	<0.05	0.35
		SWL17-3	0.15	<0.05	0.43
SWL20-1	0.07	<0.05	0.13		
SWL20-2	0.07	<0.05	0.14		
SWL20-3	0.09	<0.05	0.39		
Reactive phosphorus (mg/L)	ANZECC Lowland: 0.04	SWL1-1	<0.05	<0.02	<0.05
		SWL1-2	<0.05	<0.02	<0.05
		SWL1-3	<0.05	<0.05	<0.05

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COPC / units	Adopted Guideline Values	Sample ID	Average Concentration	Minimum Concentration	Maximum Concentration
Nutrients					
Reactive phosphorus (mg/L)	ANZECC Lowland: 0.04 ANZECC FW 95%: 0.03	SWL2-1	0.15	<0.05	1.80
		SWL2-2	0.08	<0.05	0.63
		SWL2-3	0.10	<0.05	0.98
		SWL3-1	0.11	<0.05	0.97
		SWL3-2	0.11	<0.05	0.98
		SWL3-3	0.07	<0.05	0.33
		SWL4-1	0.13	<0.05	0.83
		SWL4-2	<0.05	<0.05	<0.05
		SWL4-3	<0.05	<0.05	<0.05
		SWL5-1	<0.05	<0.05	<0.05
		SWL15-1	0.28	<0.05	0.73
		SWL15-2	0.25	<0.05	0.70
		SWL16-1	0.92	<0.05	1.80
		SWL16-2	0.55	<0.05	0.96
		SWL16-3	0.60	<0.05	1.30
		SWL17-1	0.09	<0.05	0.34
		SWL17-2	0.07	<0.05	0.21
		SWL17-3	0.08	<0.05	0.22
		SWL20-1	0.05	<0.02	<0.05
		SWL20-2	0.05	<0.02	<0.05
SWL20-3	0.05	<0.02	<0.05		



APPENDIX L

Quality Control Review

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Laboratory Internal Quality Assessment Round 1

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1517067- QC4 (Miscellaneous Plastic Bottle- unpreserved) the pH by PC Titrator (EA005P) analysis was 1 day overdue. Total Kjeldahl Nitrogen By Discrete Analyser (EK061G) & Total Phosphorus as P by Discrete Analyser (EK067G) were both 1 day overdue for extraction/preparation. EP1517220- QC13 (Miscellaneous Plastic Bottle- unpreserved), the pH by PC Titrator was 3 days overdue for analysis. EP1517278- QC17 (Miscellaneous Plastic Bottle- unpreserved) the pH by PC Titrator was 1 day overdue.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1517278- (1): ED045G Chloride by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. (2): EG035T Total Recoverable Mercury by FIMS- Recovery less than lower data quality objective.
All samples are within the Quality Control Parameter Frequency Compliance	Yes (with exceptions)	EP1517220- Two outliers were present: (1) Laboratory duplicate (DUP) for pesticides by GCMS & Semivolatile Organic Compounds, and, (2) Matrix Spikes (MS) for pesticides by GCMS & Semivolatile Organic Compounds.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	EP1517220 – Laboratory duplicates on Pesticides by GCMS, Semivolatile Organic Compounds and TRH-Semivolatile Fraction were not within specification (NEPM 2013 B3 & ALS QC Standard).
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 2

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1600665- QC22 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 4 days overdue for analysis. EP1600739- QC27 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue. EP16200841- QC29 & QC37 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1600665- EG020T Total Metals by ICP-MS & EK055G Ammonia as N by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. EP1600841- ED041G Sulphate (Turbidmetric) as SO4 2- by DA & EK059G Nitrite plus Nitrate as N (NOx) by Discrete Analysis- MS recovery not determined, background level greater than or equal to 4x spike recovery.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 3

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1601309 - QC42 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 2 days overdue for analysis. EP1601429 - QC46, QC47 & QC48 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 4 days overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1601309 - EK061G Total Kjeldahl Nitrogen by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. EP1601429 - Total Metals in Fresh Water by ORC-ICPMS for Arsenic, Chromium, Lead, Manganese, Nickel & Zinc- MS recovery not determined, background level greater than or equal to 4x spike level.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 4

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP160225- QC62 (Clear Plastic Bottle- Natural): pH by PC Titrator was 1 day overdue for analysis. EP1602288- QC68 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue for analysis. EP1602494- QC79 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1602288- EG035F Dissolved Mercury by FIMS- Recovery less than lower data quality objective.
All samples are within the Quality Control Parameter Frequency Compliance	Yes (with exceptions)	EP1517263- An outlier was identified for both Polychlorinated Biphenyls & TRH- Semivolatle Fraction.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	EP1517220 – Laboratory duplicates on both Polychlorinated Biphenyls & TRH- Semivolatle Fraction were not within specification (NEPM 2013 B3 & ALS QC Standard). 493005-W- (M16-Ma14669) Zinc, Acidity (as CaCO ₃) & Bis(2-ethylhexyl)phthalate failed- Code Q15 494000-W- (M16-Ma20713) Duplicate Total Kjeldahl Nitrogen (as N) & Copper failed- Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 5

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1603258 - QC90 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue for analysis. Total Kjeldahl Nitrogen by Discrete Analyser & Total Phosphorus as P by Discrete Analyser were both 1 day overdue for extraction/preparation.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes	No comment.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 6

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1604031- QC107, 108, 109, 110 & 112 (Clear Plastic Bottle- Natural) water samples: pH by PC Titrator were all 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1604031- EK059G Nitrite plus Nitrate as N (NOx) by Discrete Analytes- MS recovery not determined, background level greater than or equal to 4x spike level.
All samples are within the Quality Control Parameter Frequency Compliance	Yes (with exceptions)	EP1604031- Two outliers were present: (1) Laboratory duplicate (DUP) for TRH- Semivolatile Fraction, and, (2) Matrix Spikes (MS) for TRH- Semivolatile Fraction.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes)	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 7

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1605663- QC125, 126 & 128 (Miscellaneous Plastic Bottle-unpreserved) water samples: pH by PC Titrator were all 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes	No comment.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	505399-W- Duplicate- Heavy metals- Cadmium failed- Code Q15 505967-W- Duplicate- Copper (filtered) & Zinc (filtered) failed- Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	505240-W- Method Blank- Heavy metals-Cadmium failed.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 8

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1606351 - QC144, 145, 146, 148 (Clear Plastic Bottle- Natural) water samples analysed by pH by PC Titrator were all 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes	No comment.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 9

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1607585- QC164, 165 & 166 (Miscellaneous Plastic Bottle-unpreserved): pH by PC Titrator was 1 day overdue for analysis. EP1607834- QC182 (Clear Plastic Bottle- Natural): pH by PC Titrator was 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1607585- ED041G Sulphate (Turbidimetric) as SO ₄ ²⁻ by DA-Recovery greater than upper data quality objective. EP1607834- EK059G Nitrite plus Nitrate as N (NO _x) by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. 513084-W- Spike- % Recovery, Nitrogens (speciated) for both Nitrate & Nitrite (as N) & Nitrate (as N) failed- Code Q08: the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	511908-W- Duplicate, Nitrogens (speciated) Total Kjeldahl Nitrogen (as N) & Duplicate Phosphate total (as P) failed- Code Q15 512593-W- Duplicate, Alkali Metals, Potassium failed- Code Q15 512878-W- Duplicate, Nitrogens (speciated), Total Kjeldahl Nitrogen (as N) failed- Code Q15. 513084-W- Duplicate, Heavy Metals, Copper & Zinc (filtered) failed- Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 10

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1609263- QC202, 204, 205, 206, 208 (Miscellaneous Plastic Bottle-unpreserved): pH by PC Titrator were all 3 days overdue for analysis. EP1609324- QC210 (Clear Plastic Bottle- Natural): pH by PC Titrator was 2 days overdue.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1609263- EG094T Total metals in Fresh Water by ORC-ICPMS-MS Recovery not determined, background level greater than or equal to 4x spike level. 518100-W- Spike- % Recovery, Sodium failed. Code Q08: the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.
All samples are within the Quality Control Parameter Frequency Compliance	Yes)	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	516988-W- Duplicate, Heavy Metals, Selenium failed- Code Q15 517147-W- Duplicate, Heavy Metals, Selenium failed- Code Q15 516767-W- Duplicate, Nitrogens (speciated), Total Kjeldahl Nitrogen (as N) failed- Code Q15 517203-W- Duplicate, Heavy Metals- Chromium, Lead, Selenium & Zinc failed- Code Q15 517515-W- Duplicate, Heavy Metals, Selenium (filtered) failed. 517711-W- Duplicate, Heavy Metals, Selenium failed. 517930-W- Duplicate, Nitrogens (speciated) Total Kjeldahl Nitrogen (as N) failed. Duplicate, heavy metals- Chromium (filtered) & Nickel (filtered) failed. Duplicate phosphorous reactive (as P) failed- Code Q15 518100-W- Duplicate- Phosphorus reactive (as P), Selenium (filtered), Total Kjeldahl Nitrogen (as N) & Chromium failed- Code Q15 <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 11

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1610059- QC213 & QC215 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator were both a day overdue for analysis. EP1610184- QC224 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 1 day overdue for analysis. EP1610333- QC232 (Miscellaneous Plastic Bottle- unpreserved): pH by PC Titrator was 2 days overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1610184- EG094F Dissolved Metals in Fresh Water by ORC-ICPI & EG094T Total metals in Fresh Water by ORC-ICPMS-MS Recovery not determined, background level greater than or equal to 4x spike level. EP1610333- EK059G Nitrite plus Nitrate as N (NO _x) by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level.
All samples are within the Quality Control Parameter Frequency Compliance	Yes (with exceptions)	EP1610333- The water laboratory duplicate analysing Total Phosphorus as P by Discrete Analyser did not meet the quality control specification (NEPM 2013 B3 & ALS QC Standard).
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	520951-W- Duplicate, Heavy Metals- Arsenic, Chromium & Zinc failed- Code Q15 521286-W- Duplicate, Heavy Metals- Copper, Iron & Cadmium (filtered) failed Code Q15 521478-W- Duplicate- Sulphate (as S) & Total Kjeldahl Nitrogen (as N) failed- Code Q15 <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 12

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1611194- QC239 & QC241 (Miscellaneous Plastic Bottle-unpreserved): pH by PC Titrator were both a day overdue for analysis. EP1611273- QC245, 246 & 247 (Clear Plastic Bottle- Natural) pH by PC Titrator were all 2 days overdue for analysis. EP1612105- QC262, 263, 264 & 265 (Miscellaneous Plastic Bottle unpreserved) pH by PC Titrator were all 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1611273- EK059G Nitrite plus Nitrate as N (NOx) by Discrete Analyser-MS Recovery not determined, background level greater than or equal to 4x spike level. 525644-W- Spike % Recovery, Nitrogens (speciated), Total Kjeldahl Nitrogen (as N) failed- Code Q08. 525120-W- Spike % Recovery, Nitrogens (speciated), Total Kjeldahl Nitrogen (as N) failed- Code Q08. <i>*Q08: the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.</i>
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	525120-W- Duplicate, Acidity (as CaCO ₃) & Sulphate (as S) failed- Code Q15 <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 13

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1612105- QC262, 263, 264 & 265 (Miscellaneous Plastic Bottle-unpreserved): pH by PC Titrator were both a day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1611273- EK059G Nitrite plus Nitrate as N (NO _x) by Discrete Analyser-MS Recovery not determined, background level greater than or equal to 4x spike level. 528701-W0 Spike % recovery, Mercury Failed. Q08: the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	527744-W- Duplicate, Acidity (as CaCO ₃) & Total Kjeldhal Nitrogen (as N) failed- Code Q15. 528701-W- Duplicate, Phosphate total (as P) – Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 14

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1700437- QC290, 287, 286, 285, 283 & 282 (Clear Plastic bottle-Natural): pH by PC Titrator were both a day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1700437- EK055G Ammonia as N by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. 531096-W- Spike % recovery- Heavy Metals- Aluminium failed- Code Q08 531351-W- Spike % recovery- Heavy Metals- Aluminium failed- Code Q08 <i>*Q08-the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.</i>
All samples are within the Quality Control Parameter Frequency Compliance	Yes (with exceptions)	EP1700437- The water laboratory duplicate analysing Dissolved Mercury by FIMS-low level did not meet the quality control specification (NEPM 2013 B3 & ALS QC Standard).
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	530890-W- Duplicate, Total Kjeldhal Nitrogen (as N) failed- Code Q15. 531625-W- Duplicate, Total Kjeldhal Nitrogen (as N) failed- Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 15

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1701516- QC300, 302, and 304 (Clear Plastic bottle- Natural): pH by PC Titrator were both a day overdue for analysis. EP1701583- QC308, 309, 310 & 311 (Clear Plastic bottle- Natural): pH by PC Titrator were all a day overdue for analysis. EP1701667- QC 320, 318 (Miscellaneous Plastic bottle- unpreserved): pH by Titrator were both a day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1701583- EK057G Nitrite as N by Discrete Analyser – Recovery less than lower data quality objective. EK059G Nitrite plus Nitrate as N (NOx) by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	534351-W- Duplicate for lead and zinc failed- Code Q15. Duplicate for heavy metals- Zinc failed- Code Q15. Duplicate for acidity (as CaCO ₃) failed- Code Q15. 534540-W- Duplicate, Heavy Metals- Nickel & Selenium failed. Duplicate- Acidity (as CaCO ₃) failed- code Q15. 534765-W- Duplicate, Heavy Metals- Copper failed- Code Q15. 534877-W- Duplicate, Heavy Metals- Selenium failed- Code Q15. 535050-W- Duplicate, Heavy Metals- Zinc failed- Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 16

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1702376- QC328 (Miscellaneous Plastic Bottle): pH by PC Titrator was 1 day overdue for analysis. EP1702447- QC332 (Miscellaneous Plastic Bottle): pH by PC Titrator was 1 day overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes (with exceptions)	EP1702376- EK055G Ammonia as N by Discrete Analyser – Recovery less than lower data quality objective. EK059G Nitrite plus Nitrate as N (NOx) by Discrete Analyser- MS recovery not determined, background level greater than or equal to 4x spike level. EP1702447- EG035F Dissolved Mercury by FIMS- Recovery less than lower data quality objective. ED041G Sulphate (Turbidimetric) as SO4 2-by DA, EG035F Chloride by Discrete Analyser & EG094T Total Metals in Fresh Water by ORC-ICPMS- MS recovery not determine, background level greater than or equal to 4x spike level. 537669-W- Spike % Recovery- Total Kheldahl Nitrogen (as N) failed- Code Q08. 537847-W- Spike % Recovery- Magnesium failed- Code Q08. 538272-W- Spike % Recovery- Phosphorus reactive (as P) failed- Code Q08. 538465-W- Spike % Recovery- Total Kjeldahl Nitrogen (as N) failed- Code Q08. 538684-W- Spike % Recovery- Total Kjeldahl Nitrogen (as N) failed- Code Q08. Spike % Recovery, Alkali Metals- Calcium failed- Code Q08. <i>*Q08-the matrix spike recovery was outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix.</i>
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes (with exceptions)	538465-W- Duplicate for heavy metals- Aluminium, Cadmium (filtered), Iron, Lead & Nickel failed - Code Q15. <i>*Q15: The RPD reported passes Eurofins- MGT's QC- Acceptance Criteria as defined in the Internal Quality Control Review and on the Laboratory report.</i>
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.

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Laboratory Internal Quality Assessment Round 17

An analytical quality control assessment of laboratory results for groundwater is summarised in below.

Requirement	Yes/ No	Comments
All surface and groundwater samples were submitted to NATA accredited laboratories.	Yes	ALS Environmental (NATA Accredited Laboratory 825) MGT (Accreditation Number 1261)
All samples were extracted within the required holding time.	Yes (with exceptions)	EP1703477- QC346, 347, 348, 349 & 353 (Clear Plastic Bottle-Natural): pH by PC Titrator were all 2 days overdue for analysis.
Percentage recovery results were all within the acceptable range (dynamic recovery limits based on statistical evaluation of laboratory control spike) for all matrix spikes (ms), laboratory control samples and surrogates for all analytes.	Yes	No comment.
All samples are within the Quality Control Parameter Frequency Compliance	Yes	No comment.
All internal laboratory duplicates (randomly selected intralaboratory splits) had RPDs within the acceptance criteria	Yes	No comment.
Laboratory method blanks contained no detectable levels of analytes of interest.	Yes	No comment.
All laboratory LORs were below ILs (where available)	Yes (with exceptions)	The laboratory LOR for reactive P was 0.05mg/L and the relevant guideline criteria for ANZECC (2000) FW 95% and lowland was 0.03 mg/L and 0.04 mg/L respectively.



APPENDIX M

Trigger and Threshold Rules

Determination of trigger level and threshold criteria

The OEPA defines trigger criteria and threshold criteria as follows:

- **Trigger criteria** are set at levels to forewarn of the approach of the threshold criteria and ‘trigger’ response actions. Trigger criteria must be set at a conservative level to ensure trigger level actions are implemented well in advance of the threshold criteria being reached to avoid non-compliance and to avoid compromising the environmental outcome at a specified location.
- **Threshold criteria** represent the limit of acceptable impact beyond which there is the potential to result in some level of detrimental effect on the environment. This indicates that the environmental outcome is not being met. Where the EMP is a requirement of a condition, any failure to meet threshold criteria constitutes a non-compliance with the implementation conditions.

Careful consideration has been given to these definitions throughout the development of trigger and threshold criteria for the Northlink project to ensure the intent associated with setting the criteria is achieved.

Additionally the approach used to develop suitable trigger and threshold criteria, for application during on-going monitoring of water quality as part of the construction phase of the project, is presented below with consideration given to the following guidelines:

- Australian and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand. (2000) National Water Quality Management Strategy, Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- Department of Environment Regulation (2015) Treatment and Management of Soil and Water in Acid Sulfate Soil Landscapes.

Further to the above, the Northlink baseline data set consists of a range of analytical parameters and as such the development of trigger criteria and threshold criteria has required an adaptive approach allowing for criteria to be set taking into consideration a number of scenarios within the data set as follows:

- Results reported below the limit of reporting (LOR) and below the applied assessment criteria.
- Results detected above the LOR but below the applied assessment criteria.
- Results detected above the applied assessment criteria.
- Parameters with no available assessment criteria.

Using the baseline data set the rationale for setting project trigger and threshold criteria, for application during construction, is presented within the Table A below. Noting the interim site specific trigger and threshold criteria have been developed using a baseline data set comprised of 11 events only and may be revised as additional data becomes available.

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Table A Rationale for determination of project trigger criteria and threshold criteria at surface water and groundwater sampling locations

Scenario	Trigger criteria & rationale ¹	Threshold criteria & rationale ²
<p>All results reported below the LOR and below the applied assessment criteria.</p> <p>Results are detected above the LOR but below the applied assessment criteria.</p>	<p>TRIGGER CRITERIA</p> <p>Trigger level is set at 75% of the threshold (guideline) value.</p> <p>RATIONALE</p> <p>A trigger value of 75% of guideline values was set to allow assessment of deviation from reference conditions.</p> <p>The setting of the trigger value at 75% of the threshold allows for a smaller delay period for implementation of management actions.</p> <p>Additionally the reference distribution within data set for individual parameters are of a similar order of magnitude and any variations easily identified (i.e. the range of values between the minimum and maximum of the data is low).</p> <p>Setting the trigger at 75% will assist in mitigating the risk of false triggering of exceedances i.e. reducing risk of a Type 1 error – the risk of triggering a false alarm).</p>	<p>THRESHOLD CRITERIA</p> <p>Threshold criteria is set as established guideline values.</p> <p>RATIONALE</p> <p>Results are either consistently below LOR and below threshold criteria or above LOR and below the threshold criteria. The application of established guideline values will allow determination of an actual change in conditions.</p> <p>Noting the threshold criteria applied to the site are conservative in nature, however the application of guideline values under this scenario will reduce the risk of a triggering a Type II error i.e. the risk of claiming a pollution event is acceptable.</p>

¹ Exceedances of trigger levels represent an early warning mechanism to alert of potential issues and are not intended to be an instrument of compliance and should not be used within this capacity (ANZECC & ARMCANZ 2000).

² Threshold criteria applied to the project will be (where available) established guideline values. This is rationalised on the basis that during the project we are measuring pollution potentially attributed to project activities in 'real-time'. This means at monitoring locations where contamination has not previously been detected or is consistently below threshold criteria an appropriate trigger level can be established and applied to assess if the project is causing contamination, which may need mitigation before constituting pollution.

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Scenario	Trigger criteria & rationale ¹	Threshold criteria & rationale ²
All results have remained below LOR during each sampling event with no available guideline value.	<p>TRIGGER CRITERIA</p> <p>Trigger criteria is set at LOR.</p> <p>RATIONALE</p> <p>Trigger criteria to be set at LOR as particular parameters remain undetected at specific locations. Results below LOR are considered reference conditions.</p>	<p>THRESHOLD CRITERIA</p> <p>Threshold criteria is set at LOR.</p> <p>RATIONALE</p> <p>Threshold criteria to be set at LOR as particular parameters remain undetected at specific locations. Results below LOR are considered reference conditions.</p>
<p>Results are detected above the applied assessment criteria.</p> <p>Parameters with no available assessment criteria.</p>	<p>SITE SPECIFIC TRIGGER CRITERIA</p> <p>Trigger level is set at 75 percentile of the background data set.</p> <p>RATIONALE³</p> <p>The method for derivation of site specific trigger values is based on methods presented within ANZECC & ARM CANZ (2000) however in the absence of a minimum of 24 month data set instead of computing 80th percentile values a more conservative measure has been applied using the 75th percentile of the baseline value as a trigger. Noting although ANZECC/ARM CANZ (2000) recommends the application of the median as trigger criteria in this instance this is not considered a suitable trigger mechanism as in some cases 50% of sample results will 'trigger' the implementation of contingency/corrective actions and increase risk of false triggering (Type 1 error).</p>	<p>SITE SPECIFIC THRESHOLD CRITERIA</p> <p>Threshold criteria is set as baseline maximum plus one standard deviation.</p> <p>RATIONALE⁴</p> <p>The threshold criteria represents a value that is one standard deviation above the maximum value.</p> <p>The threshold criteria represents a value that is one standard deviation above the maximum. The maximum value of data is representative of baseline characteristics within the system and will reduce the risk of a triggering a Type II error i.e. the risk of claiming a pollution event is acceptable.</p> <p>The derived threshold has been developed as the upper threshold triggering implementation of threshold contingency actions.</p>

³ Formulation of site specific trigger levels have been developed with consideration given to ANZECC/ARM CANZ (2000) National Water Quality Management Strategy Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

⁴ Data outliers are not included in the baseline information.

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Scenario	Trigger criteria & rationale ¹	Threshold criteria & rationale ²
<p>pH results are within the upper and lower guideline values</p> <p>pH results are below or above the guideline values.</p>	<p>SITE SPECIFIC TRIGGER CRITERIA</p> <ol style="list-style-type: none"> pH values are within upper and lower guideline values - the trigger criteria is set at guideline value. Trigger criteria is set as minimum baseline value minus one standard deviation. <p>RATIONALE⁵</p> <p>pH at approximately 80% of groundwater water locations is consistently less than the ANZECC & ARMCANZ (2000) lower limit of 6.5.</p> <p>Where baseline pH reference values are less than the lower trigger levels, site specific trigger value of baseline +/- one standard deviation has been set to allow assessment of deviation from reference conditions.</p> <p>In this regard using the guideline values as trigger criteria is not considered as a suitable trigger mechanism as in some cases all of sample results will 'trigger' the implementation of trigger level actions and increase risk of false triggering (Type 1 error).</p>	<p>SITE SPECIFIC THRESHOLD CRITERIA</p> <p>Threshold criteria is set as deviation of > 1pH unit from baseline values.</p> <p>RATIONALE</p> <p>Given the high – moderate risk of acid sulfate soils at the site, measurements of pH will be used to indicate whether water quality has been affected by oxidation of sulfide. With consideration given to the already low pH present at the site, the guidance document DER (2015) Treatment and management of soil and water in acid sulfate soil landscapes, Table 7 states a decrease of 1 pH unit (from the baseline) should increase the level of monitoring/management at the site and is considered suitable for application as the threshold across the site.</p>

Additional Notes:

When the data set includes values that are below the LOR these will be changed to half the value. As the data set increases over time the trigger and threshold criteria may need to be adjusted for improved accuracy.

⁵ Noting pH is a logarithmic scale with hydrogen ion concentrations covering a large range and magnitude of change. As such it is more appropriate to set trigger and threshold criteria as pH unit values not as percentages of unit values in order to account for the magnitude of change between pH units (i.e. one unit change is a magnitude of 10 times the difference).

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